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AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

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AD-A215

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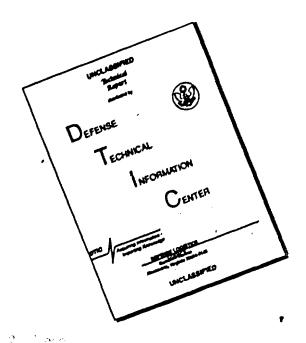


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TECHNICAL REPORT SUMMARIES

FOURTH QUARTER 1986

PREPARED BY:
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describes how to install ISOS, how to add projects, users addition to playing a special role with respect to ISDS. the administrator needs to have administrator privileges responsibility for installation and maintenance of ISDS (alls to a special role, the ISDS ADMINISTRATOR ISDSADMIN: Every installation of ISDS must have at installation, although that is not really necessary. In and databases to ISDS, and how to maintain ISDS. The least one administrator, there may be as many as one with respect to the ISBS database management system This part of the ISDS Users Manual administrator for each project supported by the 5

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ABSTRACT of this volume is intended to provide guidance in system developers on how to apply the fachniques presented in the System Development Guidebook, dated October 1983. That guidebook draws on existing knowledge of system development in general, as well as recent ICAM research. The guidebook presents an overview of the general system development process, and the mother that is incomponent dishaid be applicable to mis system development. This volume provides the system development.

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follow, and recommends basic activities and tools to use on a typical ICAM project. The framework and examples should provide the system developer with a sufficient understanding to be able to apply these techniques on other system development projects. The procedures and examples were development projects. The procedures and examples were developed using a Lisa workstation and will require some adaptation to other environments. The procedures describe much of the detail necessary to perform the activities on the ICAM project and also projects.

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IDENTIFIERS: 1. ICAM:Integrated Computer Aided
Manufacturing, ISDS Integrated System Development System:
SDP System Development Process!, EXPORT CONTROL.
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system development process using the IDEFO modeling technique. The LCA1 model, which is closely correlated to the SDMO model uses the IDEF modeling technique to The SDMG model provides a functional view of the development inithodology (SDMD) model and the life cycle antifact (CA) model These models are representations present the information structure underlying the system of the system development process, as reflected in the system development methodology developed by the SEM This document presents the system development process - Authorit __ project ABSTRACT

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VIRGINIA UNIV CHARLOTTESVILLE DEPT OF MATERIALS SCIENCE

Diffusion. Electrical Properties, and Interfacial Effects in Ordered Polymers. Charge Transport and (U) Physical Techniques for the Study of Sorption, Conduction Mechanisms in Polymer Fibers.

Final rept. 9 Sep 84-8 Sep DESCRIPTIVE NOTE:

< U. Hawk J تنا Barker, R. PERSONAL AUTHORS:

UVA/525646/MS87/101 REPORT NO

AF05R-82-0290

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included in the study. Several types of dopants were used Methods for separating the surface component of the total in this research; these included metal-saits solutions (e conductivity from the volume component are developed and previously utilized by Chen and Barker have been further Electrical conduction in several types of from the ordinary types of measurements reported in the samples Experimental results indicate that the surface is the major region of current flow for some fibers. In polymer fibers has been investigated under a variety of developed to measure electrical conductivities of small n pentane, circumstances of these experiments are quite different literature dealing with the conductivity of thin films. tibers studied included the Air Force ordered polymers (benzimidazo benzophenanthroli for comparison nylon6 polypropylene, and polyethylene also were drameter polymen fibers (as small as 10 micrometers) experiments are performed on both doped and undoped special techniques and instrumentation PPBT (nolyparaphenylene benzobisthiazole) and BBL environmental conditions. The configuration and g . LiCl, NaCl, etc !, organic liquids re.g.. nylon6, 6, this work

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phenol etc and charge transfer complex forming dopants e.g. I2. The effect on fibers of this doping produced variations in the electrical conductivity which sometimes were surprising.

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INTERFACIAL TENSION POLYPHENYLENES, BENZENE, THIAZOLES.
NYLON, POLYPROPYLENE, POLYETHYLENE, DOPING

IDENTIFIERS Up PPBT Polyparaphenylene Benzobisthiazole: BBL Benzimidazo Benzophenanthrolini, WUAFOSR2303A3. PE61102F

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(U) Synthon for the Silicon-Silicon Triple Band,

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PERSONAL AUTHORS: Sekiguchi, Akira ; Zigler, Steven S. ; West, Robert ;

CONTRACT NO. F49620-83-C-0044, F49620 84-C-0065

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SUPPLEMENTARY NOTE: Pub. in Jul. of the American Chemical Society, v108 p4241-4242 1986.

ABSTRACT: (U) The disilole, dilo-methyl-2.3.4.5-tetraphenyl-1-silacyclopentadien.1-yl) 1 reacts with benzyne to yield di(2,3-benzo-7-methyl-7-silanorbornadien.7-yl) 2. When heated with anthracene to 250 C. 2 transfers the CH3SiSiCH3 fragment giving 2.3.5.6.10.11.13.14-tetrabenzo-7.8-dimethyl-7.8-disilatetracyclo 2.2.2.20.14-tetradeca 2.5.10.13-tetraene 4, the formal 9.10-adduct of dimethyldisilyne with two molecules of anthracene. The spectral properties and crystal structure of 4 are discussed.

DESCRIPTORS (U) SILICON COMPOUNDS, FORGANIC COMPOUNDS FCHEMICAL BONDS SPECTRA, ANTHRACENES, MOLECULES, METHYL RADICALS BENZENE, CHEMICAL REACTIONS, CRYSTAL STRUCTURE REPRINTS

IDENTIFIERS (U) PEG1102F, WUAFUSR2303B2

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EVNS43 SEARCH CONTROL NO. DIIC REPORT BIBLIOGRAPHY

AD-A173 465

WISCONSIN UNIV MADISON DEPT OF CHEMISTRY

Structural and Chemical Properties of 1,3 Cyclodisiloxanes ĵ

9 86 Michaldzyk, Michael J. Fink, Mark J. Haller, Kenneth J. West, Robert : Michi Josef ; PERSCNAL AUTHORS

F49620 83-C-0044 CONTRACT NO

2303 PROJECT NO

83 TASK NO

AFUSP MONITOR

TR 86 0991

UNCLASSIFIED PEPORT

Pub in Organometallics, v5 n3 p531-SUPPLEMENTARY NOTE 538 1986 The synthesis and k-may chystal structures for tetramesitylcyclodisiloxane, 4 trans- 1, 3-dimesityl 1 3-di tert-butylcyclodisiloxane, 5a, and cis-1,3disBIS-TRIMETHYESILYE- AMINO-1,3 drogsityleyelodisilokane These short distances and believed to arise from Both 4 and 5b hazer strately puckered four 5b are reported Crystals of 4 and Intragonal of space group 14 sub-1 at prystats of 5a to 5b are triclins of values seen for normal silicon-silicor single bonds 1234 mombered rings while the ring in 3) is planar. The silicon vilicon mombonded distances in 4, 5a and 6b are Some representative chemical 230 6, 239 S and 234 3 pm, respectively, close to the ning distortions due to an antibording interaction 5a and 6b are also presented between the oxygen atoms Space group P1 reactions of 4 235 pm

SCRIPTOPS. (b) STOXANES, CYCLIC COMPOUNDS, OPGANOMETALLIC COMPOUNDS, VALUE, DISTORTION, RINGS, CHEMICAL PPOPERTIES, CRYSTAL STRUCTURE, X RAYS, ATOMS, OXYGEN, SHORT RANGE, DISTANCE), MOLECULAR STRUCTURE BUTYL METHYL RADICALS, SYNTHESIS-CHEMISTRY , REPRINTS DESCRIPTORS.

20, 6 AD-A175 463

ENVIRONMENTAL RESEARCH INST OF MICHIGAN ANN ARBOR

(U) Phase Retrieval Using Boundary Conditions,

86 FEB

6Р

Fienup, James R PERSONAL AUTHORS:

F49620-82-K-0018 CONTRACT NO

PROJECT NO

TASK NO

TR-86-0947 AFOSR MONITOP

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jnl. of the Optical Society of America A. v3 n2 p284-288 Feb 86

solution is unique, in intermediate steps in the solution finds the solution for solutions; is suggested, and it is ambiguities. An extension of the recursive algorithm that shown that the recursive method can be applied to complex It is shown that a priori knowledge of the Fourier transform for from its autocorrelation function). furthermore, even in those cases for which the ultimate edges of an object is not sufficient to ensure that it by the recursive Hayes-Quatier: algorithm there can be can be uniquely reconstructed from the modulus of its valued objects ĵ ABSTRACT

ALGORITHMS, AUTOCOFFELATION, BOUNDARIES, PHASE *FOURIER (PANSFORMATION, AMBIGUITY RECURSIVE FUNCTIONS ĵ DESCRIPTORS REPRINTS.

Phase retrieval, Hayes Quatieri algorithm PE61102F, WUAFOSR2311A1 DENTIFIERS

EVN548 SEARCH CONTROL NO DITC REPORT BIBLINGRAFHY

NORTH CAROLINA STATE UNIV AT RALEIGH DEPT OF MATHEMATICS

Consistent Initial Conditions for Linear Time Varying Singular Systems ےَ

86

Campbell, Stephen L PERSONAL AUTHORS

AF05R-84-0240 CONTRACT NO

2304 PROJECT NO

4 TASK NO

AFOSE MONITOR

TR-86-1038

UNCLASSIFIED REPORT

in Frequency Domain and State Space Methods for Linear Systems, p313-318 1986 Pub SUPPLEMENTARY NOTE

s stems Artix(1t) + ... ions for a wide given for A fairly direct method calculating the consistent initial class of implicit linear time vary Bitixiti = fit: with Aiti singular

*NUMERICAL METHODS AND SCRIPTORS UP LINEAR SYSTEMS FUUMERICAL METPROCEDURES, COMPUTATIONS DIFFERENTIAL EQUATIONS DESCRIPTORS REPRINTS Time Varying Singular Systems, PE61102F WUAF05R2304A1 IDENTIFIERS

20/10 20/8 AD-A173 459 STATE UNIV OF NEW YORK AT BUFFALD AMHERST

Wigner Phase-Space Jescription above and Below the Classical Threshold for the H + H2 Reaction.

45 JUN 86 Lee Har-Woong , George, Thomas F. PERSONAL AUTHORS:

F49620-86-C-6448, F49620-86-C-0009 CONTRACT NO

2303 PROJECT NO.

A2 TASK NO AFOSR MONITOR:

TR-86-0975

UNCL SSIFIED REPORT

Put, in Jnl. of Chemical Physics, v84 SUPPLEMENTARY NOTE:

n11 p6247-6249, 1 Jun 86

reaction is studied using the Wigner phase space approach approach is capable of describing some aspect of tunneling as the high mamentum tail of the initial Wigner probabilities arise mainly from the neglect of dynamical tunneling in the Wigner approach due to the use of real valued classical trajectories. Nevertheless, the Wigner collisions. In this paper the collinear H + H2 exchange Thus the approach yield; a nonzero reaction probability disagreements between the Wigner and quantum-mechanical The general behavior of the calculated Wigner reaction probabilities as a function o∗ the collision energy is consistent with that of the exact quantum-mechanical distribution function is likely to exhibit tunneling The Wigner phase space representation offers a semiclassical way of describing molecular probabilities reported in the past. Quantitative below the classical threshold energy ĵ ABSTRACT:

SCRIPTORS: (U) +QUANTUM THEORY, +PARTICLE COLLISIONS, +HYDROGEN, YIELD, DYNAMICS, COLLISIONS, MOLECULES, ENERGY THRESHOLD EFFECTS, MOME 4TUM PROBABILITY, REPRINTS, TUNNELING(ELECTRONICS), EXCHANGE REACTIONS DESCRIPTORS

Wigner Distribution function, PE61102F ĵ WUAF0SR2303A2 IDENTIFIERS

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SEARCH CONTROL NO. EVN548 DTIC REPORT BIBLIDGRAPHY

SRI INTERNATIONAL MENLO PARK CA AD-A173 412 NORTHWESTERN UNIV EVANSTON IL DEPT OF MECHANICAL AND 12.1 NUCLEAR ENGINEERING AD-A173 456

DESCRIPTIVE MOTE: A Controller for Robust Asymptotic Tracking in Systems with Time Varying Uncertainties,

86

: Schmiterdorf W HOPP 7 H PERSONAL AUTHORS.

AF0SR -85 -0051 CONTRACT NO.

2304

PROJECT NO

V3 TASK NO

TR 86 1037 AFOSE MONITOR

UNCLASSIFIED REPORT

Conference, p691-694 Jun 86 SUPPLEMENTARY NOTE:

guarantees that the asymptotic tractary groom can be made A control 124 is determined which This reprint considers a class of linear unknown but constant. The theory we weited here is able systems in thich there is time-varying uncertainty and arbitrarily small. Existing theory provides asymptotic tracking only for systems where the incertienty is Transform of time Practical tracking to accommodate the more realistic produces practical tracking additive disturbances varying uncortainty ----ABSTRACT

CONTROL SYSTEMS TOVAL ASSOCIATION SCRIPTORS: U LINEAR SYSTEMS CONTROL THEORY GUARANTEES, REPRINTS ASYMPTOTIC NORMALITY DESCRIPTORS

WUAFOSR2304A3 PEB1102F =: I CENTIFIEDS

20/11 11/6

(U) Dynamic Fracture Behavior of Structural Materials.

Final rept. Feb 81-Jan 86,

224P 86

⋖ : Shockey, D. Giovanola, J. H. PERSONAL AUTHORS

F49620-81-K-0007 CONTRACT NO.

2306 PROJECT NO

4 LASK NO

TR-86:0818 AFOSR MONITOR

UNCLASSIFIED REPORT

material properties for fracture at high loading rates. A inertial loading was extended to study dynamic mixed mode was demonstrated that dynamic crack initiation is essentially controlled by the mode I stress intensity and This report presents results of a program new test procedure, the one-point bend test was analyzed to improve understanding of dynamic fracture behavior by classical fracture criterion equating the applied stress and further developed th test a wide range of materials at impact loading rates. The test uses incrtial leading to load the cruck tip and afficids an unambiguous intensity to the dynamic fracture toughness is adequate, the concept of increments of crack extension and in crack propagation provided the dynamically applications and II loading correctly evaluated. Under mixed mode I and II loading establish the dynamic fractors behavior of 4340 steel chack initiation under controlled mixed mode I and II provided the dynamically applied stress intensity is investigating both crack tip loading conditions and criterion is necessary to predict crack initiation fracture as short as 20 microsecs, no time modified conditions. These new test turbhiques were used to It was shown that, for loading times to measurement of the dynamic initiation toughness test's usefulness in producing small controlled studies was also demonstrated Moreover. by the mode I dynamic fracture toughness HRC 50

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DESCRIPTORS UP CRACKING FRACTURING BACTURE MECHANICS STRUCTURAL STEEL CONSTRUCTION MATERIALS GPACE PROPAGATION, CRACKS DYNAMICS HIGH RATE, IMPACT INERTIAL SYSTEMS LOADS FORCES RANGE EXTREMES. STRESS CONCENTRATION TEST METHODS TOUGHNESS DYNAMIC LOADS, DYNAMIC RESPONSE, DYNAMIC TESTS, IMPULSE LOADING

IDENTIFIERS Out Cracking Tip Loading, One Point Bend Tests, Crack Initiation, Steel 4340, Fracture Toughness, LPN-SRI-PYU 2777 WUAFOSR2306A1, PE61102F

CALJEGRNIA INST OF TECH PASADENA DEPT OF ELECTRICAL ENGINEERING

 $\{U_i\}$ Acousto-Optic Processing of 2-D Signals Using Tempo.al and Spatial Integration

DESCRIPTIVE NOTE. Final rept

APR 86 170P

PERSONA! AUTHORS: Psaltis, Demetri

CONTRACT NO. AFOSR-82-0128

PROJECT NO. 2305

TASK NO. B1

MONITOR: AFOSR TR-86-0847

UNCLASSIFIED REPORT

methodology that was developed for accomplishing this, is were designed and experimentally demonstrated. The radar imaging processor is capable of forming images in real arrays. In both instance acoustooptic architectures were processors for synthetic aperture radar image formation The report describes research to develop developed and initial experimental demonstrations were rocustooptic information processing systems capable of processing two dimensional signals. The general time with relatively low size and power requirements. demonstrated. The same signal processing method was applied to two dimensional spectrum analysis and the processing of signals from broadband adaptive phased capable of producing two dimensional correlations of recognition applications and an acoustooptic system Several processors were also developed for pattern images at standard video rates was experimentally integrations in the optical system. Acoustooptic the use of a combination of temporal and spatial performed

DESCRIPTORS: (U) +"PTICAL PROCESSING, +RADAR IMAGES, +ACOUSTOOPTICS, INFCRMATION PROCESSING, PATTERN RECOGNITION, ADAPT: YE SYSTEMS, PHASED ARRAYS, TWO DIMENSIONAL, SYNTHETIC APERTURE RADAR, PATTERN

AD: A173 411

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EVN548 SEARCH CONTROL NO. DIIC REPORT BIBLIOGRAPHY

> CONTINUED AD A173 411

BIAS DYNAMIC RANGE SPECTPUM ANALYSIS RECOGNITION

WUAF0SR230581, PE6:102E _ _> IDENTIFIERS

20/12

AD-A173 370

Nonlinear Optical Properties and Subpicosecond Dynamics of Excitons and Electron-Hole Plasmas HUGHES RESEARCH LABS MALIBU CA ĵ

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Annual rept. Jul 84-Jul DESCRIPTIVE NOTE:

Multiple Quantum Well Structures.

142P 86 AUG

A : Lam, U. F. McFarlane R. Smirl, A. L PERSONAL AUTHORS:

F49620-84-C-0083 CONTRACT NO.

2305 PROJECT NO

17 TASK NO

TR -86-0837 ALOSE MONITOR

UNCLASSIFIED REPORT

excitoris, 15) picosecond photorefractive effects, and 16) Discussions nonlinear optical properties and picosecond dynamics of picosecond and femtosecond I ser cevelopment. Reywords Neulinear Optics: Optical Devices; Ultrafast Phenomena carriers in multiple quantum wells and other bulk and (2) picosecond time-Progress is reported in measuring the resolved transfent absorption (3 picosecond timeresolved photoluminescence, '4' theory of dressed Molecular Beam Epitaxially grown structures. of our progress are divided 10% six parts; fabrication and characterization. Multiple Quantum Wells <u>.</u> ABSTRACT

SYSTEMS ***QUANTUM THEORY** DEFICIENCIES), LASERS, MOLECULAR BEAMS, NONLINEAR SYS SPTICAL EQUIPMENT, OPTICAL PROPERTIES, OPTICS, PHOTOLUMINESCENCE, PLASMAS(PHYSICS), STRUCTURES, HETEROJUNCTIONS, GALLIUM ARSENIDES, ALUMINUM GALLIUM MOLECULAR BEAMS, BULK MATERIALS, ELECTRONS, HIGH RATE, HOLESTELECTRON SOLID STATE PHYSICS. EPITAKIAL GROWTH, ĵ DESCRIPTOPS. DYNAMICS. ARSEN1 DE

'Quantum Wells, Photoreflectance, WUAF0SR230584 <u>_</u> IDENTIFIERS PE61102F

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SEARCH CONTROL NO. EVN546. PITC PEPGET BIRLINGRAPHY

20:11 .. 5 AD-A173 355

STANFORD UNIT OF DEPT OF MATERIALS SCIENCE AND ENGINEERING An Investigation of the Structure and High Temperature Mechanical Properties of Oxide Dispersion Strengthened Allove

Final rept. 1 Oct 80-30 Sep 85 DESCRIPTIVE NOTE

SCRIPTORS: (U) 'NICKEL ALLOYS, 'OXIDES. 'ALUMINUM ALLOYS, 'HIGH STRENGTH ALLOYS, ALLO'S, ALUMINUM. CARBIDES. CERIUM ALLOYS, DEFORMATION, DISPERSINS, DISPERSION

DESCRIPTORS

strength

suggests that much more refractory particles, such as oxides or carbides, are needed for high temperature

intermetallic particles at high temperatures. This

CONTINUED

AD-A173 356

HARDENING, HIGH STRENGTH, HIGH TEMPERATURE, INTERMETALLIC COMPOUNDS, IRON ALLOYS, MECHANICAL PROPERTIES, METALS. PARTICLES, SOL. D SOLUTIONS, SOLIDIFICATION, SOLUTES. STRENGTH(GENERAL), STRENGTH(MECHANICS), TEMPERATURE. TWINNING(CRYST/LLOGRAPHY), OXIDATION RESISTANCE.

00S(0xide Dispersion Strengthened)

PEG1102F, WUAFOSR2306A1

IDENTIFIERS:

Nix William D PERSONAL AUTHORS

AF05R-81-0022 CONTRACT NO

2306 PROJECT NO.

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UNCLASSIFIED REPURT

strengthening is made by dispersed second phase particles The research work deals with the structure and mechanical properties of high temperature metals and alloys in which a significant contribution to

Because the research has been conducted on both aluminum and nickel based alloys, this report is organized along these lines. We have studied, for the first time, the combined effects of oxide dispersion and solute

than that for the solid solution without oxide particles temperatures, as expected, but that the strength of the ODS alloy at intermediate temperatures is actually lower strengthening at high temperatures in an ODS aluminummagnesium alloy. We find that the oxide particles contribute significantly to the strength at high

design of 005 alloys Because rapidly solidified aluminum the ODS alloys at very high temperatures. This weakening alloys has alloys has also been conducted. We find these alloys to be much stronger than ODS aluminum at 1 w and alloys are so similar to 0DS aluminum alloys, a study of the $h_1 {\rm d} h$ temperature strength properties of Al-Fe-Ce intermediate temperature but they are much weaker than combined efficiently with oxide strengthening in the This suggests that solute strengthening cannot be

effect is caused mainly by twinning deformation of the

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AD-A173 351	UNIVERSITY
	CHEMISTRY
	NORTH TEXAS STATE UNIV DENION DEPT OF CHEMISTRY
7 3	STATE UNIV
AD-A173 352	NORTH TEXAS

(U) Synthesis of the Two Epimenic 6-Carbomethoxy 5-Dimethyl-endo-tricyclo-5 2 1 0-2,3 -dec 8-en-3 Ones Unequivecyl Structural Assignment of the 5 Alpha-and 58ety Isorers via Two Dimensional NMM Spectrolopy

Preparation of Oligomeric and Polymeric Alpha, Omega~

OF SOUTHERN CALIFORNIA LOS ANGELES LOKER

HYDROCARBON RESEARCH INST

Bistrimethylsiloxyppolymethylchlorosiloxanes and

Their Reactions with Alkyllithium Reagents.

PERSONAL AUTHORS. Par YI-Ming (Servis) Kenneth L

William P.

90

AF05R 82:0003

2304

PROJECT NO

86 4P

PERSONAL AUTHORS Smith William B Mirchard Alar P Sun: Sunesb C Jun Per Wen.

CONTRACT NO AFOSB 94 0045

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UNCLASSIFIED REPORT

SUPPLEMENTARY MOTE Pub in and or Grannic Chem stry. V51 n/5 p3/72 2054 (486)

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TR 86 1066

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TASK NO MONITOR: SUFPLEMENTARY NOTE: Pub in Organometallics, v5 n4 p683: 690-1986
ABSTRACT (U) A Series of alpha, omega-

bis. trimethylsilovy polymethylchlorosilovaner MO superscript CL sub-rM, or 15 or approx.35; gs vell as MD superscript CL sub-rM, or 15 or approx.35; gs vell as MD superscript CL 0 superscript WH have been pripared by the palladium or carbon catalyzer evenange reaction of MD superscript H sub-NM with a 141 or benzyl chloride. The reaction of these with alkyl thrum reagents in ether at 25 has been studied alkyl thrum reagents in ether at 25 has been studied alkyl thrum reagents in ether at 25 house cleavage of the 31 house cleavage. Some cleivage is also observed with the polymer MD superscript CL D superscript HM underge facile allower MD superscript CL approx.35M. The spectral proporties in particular HM, 30, and 295; NMP of roth and cleavage interpretation of the 134C and 295; NMP and C is alscussed.

CESCRIPTORS - U - POLYMERS - SILOKANES
- SYNTHESIS-CHEMISTRY - ALEVLATION METHYL PADICALS
- CHORINE REACTION FINETICS - ALEY'L RADICALS - LITHTUM

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THE TENNE STRUCTURE SEARCH CONTROL NO. EVNS48

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STATE UMIY OF NEW YORK AT BUTTALC DEPT OF CHEMISTRY

Burneture of the Iodine Columns in Iodinated Nylon 6

86 10P

PERSONAL AUTHORS: Burzynskii, Ryszand Prasad, Paras N. Murthy, N. S.

REPORT NO SUNY - AB / TR 6

CONTRACT NU F49620-85-C-0052

PROJECT NO 2303

TASK NO. B3

MONITOR: AFDSR 1R-86-0953

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jul of Polymer Science: Polymer Physics Edition v24 p133-14* 1986

increase in the conductivity. A study of iodine-complexed most likely in the form of I2 I3:- ' complex polarization nylon 6 films by polarized resonance Raman spectra shows and IS: species the latter characteristics of the Raman spectra show that the I2 I3 units are orinted along the polymer chain and the I3... ISTRACT: 'U: Halogenated materials such as polyiodide or polybromide complex and halogen doped polymers have doping. Many of these intercalated polyhalide materials The 12 13: 1 partial oxidation of the original material leads to an been extensively investigated in recent years, 1.5 The nature of these halogen species and to determine if charge transfer between the dopant and the donor or a interest in these systems stems from the tremendous increase in the electrical conductivity upon halogen research effort has been devoted to the study of the behave as low-diriensional conductors. Much of the These Raman results are consistent with the x ray units are in a more stable moiety than the I3: ions are perpendicular to the chain axis the presence of both I3:

ESCRIPTORS OF THY ON FIDDINE OF MOLECULAR STRUCTURE.

AD-A173 349

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Publin IEEE (mangactions on Flagma Science vPS 13 no p484 431 Dec 45 SUPPLEMENTARY NOTE

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

Aspects of Organomercury Chemistry

<u>8</u>

. اح Dewar Michael S. (Merz, Kenneth M. PEPSONAL AUTHORS:

F49620-83-C-0024 CONTRACT NO

2303 PROJECT NO

B2 TASK NO

AFOSR MONITOR

TR-86-1045

UNCLASSIFIED REPORT

Pub. in Organometallics, ∀4 n11 p1967~ SUPPLEMENTARY NOTE: 1972 1985

partly because of its varied chemistry and partly because especial in erest to both inorganic and organic chemists. sixth row. The topics studied were all sandwich and halfbeen parameterized for mercury, we decided to study two topics of interest in the organomercury area, partly in the hope of resolving uncertainties and partly to check. its compounds are readily available, Since MNDO has now sandwich cyclopentadienyl mercury compounds and by the addition of mercury cations to olefins oxymercuration). the ability of MNDO to deal with an element from the Mercury has long been an element of D T ABSTRACT

ESCRIPTORS: (U) ORGANOMETALLIC COMPOUNDS, OMERCURY, QUANTUM THEORY, MOLECULAR STRUCTURE, CYCLIC COMFOUNDS, ADDITION REACTIONS CATIONS, OLEFIN POLYMERS, HEAT OF FORMATION, REPRINTS DESCRIPTORS: (U)

MNDO: Modified Neglect of Differential Overlapi, WUAFUSR2303B2 PEG1102F IDENTIFIERS

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DITC REPORT BIBLINGRAFHY SEARCH CONTROL NO. EVN548

AD-A173 324 20 6 9.2

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES SIGNAL AMO Image processing inst

INTER CONNECTIONS, CIRCUITS, DEMONSTRATIONS, DIAGRAMS, STATE SYSTEMS, GAVES CIRCUITS, HIGH VELOCITY, HYBRID SYSTEMS, MAPPING, OPTIMIZATION POSITION LUCALION

CONTINUED

AD-A173 324

WUAF0SR230581, PE61102F

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IDENTITIERS

OUT NonTinear Real-Time Optical Signal Processing DESCRIPTIVE NOTE: Annual rept. 1 Jul 84-30 Jun 65.

JUL 86 27

PERSONAL AUTHORS - Sawchuk, A. A. Jenkins B.

CONTRACT NO AFGSR 84 0181

PROJECT NO 2 205

TASK NO B1

MONITOR AFOSE TP 85 0834 UNCLASSITIED PEPOPT

ISTRACT 19 During the beniod 1 July 1984 - 30 June 1935 - the reserven under Grant AFOSR-84 0161 has concentrated on four major areas. First, work has

continued on in experimental sequential optical binary barallel andhilocture that is constructed from an array of binary optical antiching elements. Mor gates with intercorrections done by a computer generated hologram.

high spice by digital, preduct SBW, interconnection holograms and compact reflection generals of the general anchitecture with the intent of building a larger demonstration system with greater companies as Note as

demonstrit in system rith greater classifictions. Not we have studied improved methods of crassifing the studied improved methods of crassifing the discrepance for the horizonal by the use of hybrid digital vising for the horizonal process. As has examined analytical crassified mapple process of discrepance in the horizonal arrays and optimization proceedures to describe the minimum set of hoses space space.

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CAMBPIUSE

U) Metallic Induction Reaction Engine

ELECTROMAGNETIC LAUNCH RISEARCH INC

8 8nV ñ Final rept. 15 Aug 34 DESCRIPTIVE NOTE

IDENTIFIERS: (U) Reaction engines. Electromagnetic launchers. Pulse coils. Pulsed power. Induction reaction engines. WUAFOSR2308A1, PE61102F

(U) Reaction engines, Electromagnetic

PROPULSION ESCAPE VELNUITY, PLASMAS-PHYSICS, METALS, RINGS, ENERGY TRANSFER MAGNET COILS, THRUSTERS, HIGH ACCELERATION, PULSES, MAGNETIC FIELDS

85

Kolm Hart Douglas (Mongeau Peter P PERSONAL AUTHORS

EML - 85 AF 002 REPORT NO

Henry H

2308 P.ROJECT NO

2 TASK NO AFOSR MONITOR

TR 86.0933

UNCLASSIFIED REPORT

the mutual inductance gradient between induction coil and Metal rings placed close to a pulsed field ejected in the form of plasma. In practice the process is including several in which 12 gram rings were accelerated to over 700 m s at efficiencies above 30 percent. This is studies is the discovery that to achieve maximum velocity projectily ring in the firing position must be reduced to minimize the initial acceleration. This reduces the back- Livalent to the performance of a high power rifle with voltage and increases the interaction time, resulting in limited by electrical, mechanical and thermal failure of coil have been accelerated at 200 million gee to 5 km/s principle to accelerate metal rings at high efficiency a one inch long barrel. An unexpected result of these We have studied the basic phenomena and ultimate in a 2 cm length by Sandoletov in the USSR Bandoletov. 1977. We have studied the basic nhenomens and illimitations. evaporation so that the reaction mass is ultimately the induction coil Over a hundred shots were fired It is possible in and impart sufficient energy to ensure melting and theoretically and experimentally to determine its limitations of the pulsed induction process both usefulness as a reaction engine maximum energy transfer . ⊃ ~ ABSTRACT

SPACI L AUNCHERS. *ELECTRIC PROPULSION, *MAGNETIC · ION ENGINES, MASS, MELTING DESCRIPTORS INDUCTION

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SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIOGRAPHY

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AD A173 321

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

ENTHALPY, HEAT OF REACTION, ACTIVATION ENERGY

CONTINUED

U) MNDO Parameters for Silicon, Revision

MNDO:Modified Neglect of Differential ĵ I DENTIFIERS:

Overlay), WUAFOSR2303B2, PEG1102F

Dewar Michael J. Friedheim James .Stewart James J. Grady Gilbert , Heily, Eamonn F PERSONAL AUTHORS

F49620:83 C:0024 CONTRACT NO

2303 PROJECT NO

œ TASK NO

MONITOR

TR 85 1049 REV AFOSP

UNCLASSIFIED REPORT

v5 n2 p375 Pub in Organometalines SUPPLEMENTARY NOTE 379 1986

involving SiP2 species. Peactions in advina the formation of stiticon with other heteroatems, most notably oxygen MNDD has been reparametrized for silicon. The results for original parameters for silicon, have given satisfactory results in many cases, recent extensive calculations. In particular calculations with the previous parameters Franch also performed usations for compounds here and elsopheme, have revealed contain inadequacies. of such sulphones were invariably producted to be much badly for compounds confainting mailterly bonded sillicon nd silacetylene were reaction and intivation are compared with results from ind 2 respectively greatly underestimating the streems of the multiple r wide variety of silicon-contining compounds are in Showed an undue preference for dimitint silicon. One Enthalpies of manifestation of this was to be seen in reactions While MNDO calculations, using the recent high level ab initio calculations much tofter agreement with experient of Silicon with other heteroalows. too evoluarmic. The original MNE bonds for example, silaethylena predicted to have bond orders of targe errors also occurred in di

STLICOP FOR THEREV REPRINTS.
C'NIZHTION TOTENIALS DIFOLE MOMENTS
VIBRATIONAL PRICISE PARAMETERS PONT DOWNSTON SELECTION

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SEARCH CONTROL NO EVN54B DIIC REPORT BIBLIOGRAPHY

AD: A173 319

DEPT OF INDRGANIC CHEMISTRY - ENGLAND -BRISTOL UNIV Heteronuclear Star Clusters: (Ni2Pt2W4 : mu3 : CPh : 4 : C0) 8 - eta C5H5 - 4 - and (Ni2Pt2W4 (mu2-CR - 1mu3 CR) 3 - C0 -8 eta-CSH5 4 + R-Ph or p-C6H4Me i ē

Journal article DESCRIPTIVE NOTE

86

Elliott, Gregory P. ; Howard, Judith A. Stone F G Mise, Takaya , Nunn, Christine M PERSONAL AUTHORS

2303 PROJECT NO

TASK NO

TR 86 1042 AFOSR MONITOR

UNCLASSIFIED REPORT

in Angewande Chemie, v25 n2 p190-Pub SUPPLEMENTARY NOTE 192 Feb 86

PtW2/mu2-CP.2.CO.4/Eta-CSH5.2 (R:Ph or C6H4Me-4) with bis of the cluster compounds Ni2Pt2W4(Mu3-CR)4(CD)8(Eta-C5H5) cyclo-octa 1,5 diene | nickel affords separable mixtures 4 and N12Pt2W4-Mu2 CR11Mu3-CR131C0181n-C5H514, An X-ray diffraction study on Ni2Pt2W4!Mu3 CPH:4:CD:8:Eta-C5H5)4 has revealed a nozel star' configuration for the eight Treatment of the trimetal compounds Ð metal atoms ABSTRACT:

DIENES, NICKEL, CLUSTERING, MOLECULAR STRUCTURE ISOMERS, REPRINTS, CARBONYL COMPOUNDS, METHYL · PLATINUM, · TUNGSTEN, ORGANIC PHOSPHORUS *METAL COMPOUNDS, *HETEROCYCLIC _ _ DESCRIPTORS COMPOUNDS COMPOUNDS RADICALS LIGANDS

Tetrahydrofuran WUAFOSR2303B2 _ IDENTIFIERS PE61102F

7/4 AD A173 318 PITTSBURGH UNIV PA SURFACE SCIENCE CENTER

ESDIAD (Electron Stimulated Desorption Ion Angular Distribution) Studies of the Structure of Species Chemisorbed on Ni/110). The Surface Bonding of NH3 NH2, and CO, ĵ

<u>е</u>ь

Yates, John T., Jr.; Klauber, C.; Alvey, M. D. ;Metiu,H. M. ;Lee,J. PERSONAL AUTHORS

NSF-CHE83-10106 CONTRACT NO.

2310 PROJECT NO

A2 TASK NO AF0SR TR-86-1060 MONITOR

UNCLASSIFIED REPORT

Pub. in Proceedings of International Workshop, Desorption Induced by Electronic Transitions DIET-II, (2nd) German D.R., 15-17 Oct 84. SUPPLEMENTARY NOTE:

In this paper it will be shown that ESDIAD (Electron Stimulated Desoption Ion Angular Distribution) can give detailed information about both the structural and the dynamic behavior of surface species. There are at species is frozen azimuthally on the surface with its plane perpendicular to the Ni rows, yielding two sharp H+ beams in ESDIAD. This surface bonding mode is consistent with the molecular orbital structure of NH2. The NH2 electron donor mechanism to the ridge atop sites of the corrugated Ni(110) surface, and to exhibit either no preferential azimuthal orientation, or essentially free pattern is observed, indicating that the parrier to NH3 few physical measurement techniques in surface investigated the process: NH3(ads) yields > NH2(ads) + Here, the NH3 molecule is found to bond by an rotation is below about 0.07 eV. In contrast, the NH2 rotation. For temperatures at low as 29K, a halo H+ science which give such detailed information about surface bonding in polyatomic adsorbates. We have species is thermally stable to about 375K present H(ads).

AD-A173 319

AD-A173 318

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EVN54B SEARCH CONTROL NO. DTIC REPORT BIBLIOGRAPHY

CONTINUED AD-A173 318

REPRINTS SURFACE CHEMISTRY MOLECULAR NICKEL DESORPTION, TEMPERATURE, ADSORPTION CARBON · AMMONITA. *CHEMISORPTION AZIMUTH STRUCTURE DESCRIPTORS MONOXIDE ROTATION. ESDIAD Electron Stimulated Desorption Ion Angular Distribution: WUAFOSR2310A2, PE61102F ĵ IDENTIFIERS

20/4 AD A173 310

LAB

MICHIGAN STATE UNIV EAST LANSING TURBULENCE STRUCTURE 14/2

(U) Experimental Study of Turbulence Production Mechanisms in Boundary Layer Flows

1 Oct 82-30 Sep 84 Final rept. DESCRIPTIVE NOTE

MAY 85

ш Falco.R PERSONAL AUTHORS:

1SL-85-1 REPORT NO.

F49620-82-K 0003 CONTRACT NO

2307 PROJECT NO

2 TASK NO

TR-86-0960 AFOSR MONITOR

UNCLASSIFIED REPORT

production process near a wall are all manifestations of classe; were simulated experimentally vortex ring moving dimensions--qualitatively by simple numerical vortex-in result from the interaction of two of these vorley ring interactions to ones producing strong turbulence. These the evolution of vertex ring like eddies with the wall Boundary layer interactions have cell simulations. The instantanecus local thickness of involving visual scale motions play dominant roles in determining which Studies of turbulence structure near a simultangous multiple hot-wire anemometry, along with variety of evolutions observed during the turbulence Results indicate that the wide the viscous sublayer and the flow field of the large performed in an attempt to determine the underlying and the wall layer. Additional important evolutions information in two mutually orthogonal planes, and wall interactions occurring with small spatial and wall interactions, and -within the constraints of both experimental and numerical simulations were been divided into (4) classes ranging from weak wall show that the production process has many Detailed experiments conceptual framework temporal differences. manifestations.

AD-A173 310

AD A172 318

SEAPCH CONTROL NO. EVNS48 DIIC REPORT BIBLINGRAPHY

CONTINUED AD A 173 310

9/2 9/1 AD: A173 305 CINCINNATI UNIV OH SOLID STATE ELECTRONICS LAB

class of evolution is observed

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DESCRIPTORS

(U) Integration of Detectors with Optical Waveguide Structures *EDDIES FLUID MECHANICS *BOUNDARY LAYER WALLS, VORTICES, PRODUCTION RINGS · TURBULENCE .

INTERACTIONS STRUCTURAL PROPERTIES VISCOSITY LAYERS. THICKNESS, CONVECTION, EVOLUTION/GENERAL, MODEL TESTS. MATHEMATICAL MODELS, FLOW VISUALIZATION, HOT WIRE ANEMOMETERS, DRAG, HEAT TRANSFER Turbulence production, Vortex in cell

Vorticity, PE61102F

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IDENTIFIERS

15 Mar 85-15 Mar 86 Interim rept. DESCRIPTIVE NOTE:

86 MAY Boyd, J. T. PERSONAL AUTHORS:

F49620-85-C-0044 CONTRACT NO.

2305 PROJECT NO

8 TASK NO

TR-86-0817 AFOSR MONITOR:

UNCLASSIFIED REPORT

period occurred in the areas of (1) photodetectors formed waveguides, (5) theoretical analysis of low loss optical devices for signal processing circuitry associated with Major accomplishments during this report these photodetectors, (3) improved techniques for laser waveguides on silicon and gallium arsenide substrates, and (6) characterization of the materials used in the above devices by Raman spectroscopy with microprobe complementary metal-oxide-semiconductor electronic recrystallization of silicon, (4) low loss optical on optical waveguide surfaces; (2) high-speed Ĵ

DESCRIPTORS: (U) *OPTICAL WAVEGULLES,
LOW LOSS, COMPLEMENTARY METAL OXIDE SEMICONDUCTORS,
SIGNAL PROCESSING, CIRCUITS, RECRYSTALLIZATION, SILICON,
LASER APPLICATIONS, SILICON, GALLIUM ARSENIDES,
SUBSTRATES, RAMAN SPECTROSCOPY, INTEGRATED SYSTEMS

PE61102F 5 IDENTIFIERS:

UNCLASSIFIED

SEARCH CONTROL NO. EVN54B DTIC REPORT BIBLIOGRAPHY

AD-A173 296

CALIFORNIA UNIV BERKELEY DEPT OF PHYSICS

(1) Quantum Limits of Superconducting Heterodyne Receivers.

15 May 85-14 May 86, DESCRIPTIVE NOTE: Annual rept

VNG

Richards, Paul L. PERSONAL AUTHORS

AF05R-85-0230 CONTRACT NO

2305 PROJECT NO

S TASK NO

TR 85 0833 AFOSR MONITOR

UNCLASSIFIED REPORT

quantum limited SIS quasiparticle heterodyne receivers at These matching structures will then be scaled to smaller dimensions to investigate their performance at submillimeter wavelengths. The approach used is to build Substantial progress has been prototype matching structures for 90 GHz and test them The goal of this research is to produce made toward these goals during the first grant year submillimeter wavelengths thoroughly

SCRIPTOPS UP MIXERS/ELECTRONICS/ HETERODYNING, LIMITATIONS MATCHING, PARTICLES FROTOTYPES, QUANTUM THEORY, RECEIVERS, SUBMILLIMETER WAVES, SUPFREDNUCTORS, RADIO RECEIVERS, EXTREMELY HIGH PREQUENCY DESCRIPTOPS

IDENTIFIEPS (U) SIS/Superconductor Insulator Superconductor) (Ouasiparticle Engerody)a receivers, PEG1102F WUAFOSR2305C3

7/4 AD-A173 295

20 / 10

PASADENA DIV OF CHEMISTRY AND CALIFORNIA INST OF TECH CHEMICAL ENGINEERING

(U) Theoretical and Experimental Studies in Reactive Scattering

Final rept. 1 Oct 82-30 Sep 85 DESCRIPTIVE NOTE:

AUG 86

Kuppermann, Aron ; PERSONAL AUTHORS:

AF0SR-82-0341 CONTRACT NO

2303 PROJECT NO

TASK NO.

AFOSR MONITOR: TR-86-0870

UNCLASSIFIED REPORT

collinear and three dimensional systems of importance for the fundamental aspects of chemical dynamics and for advanced technologies of interest to the United States Air Force. Some of these calculations are used to test involving beams of He atoms, it atoms and metastable H3 molecules are performed aimed at the determination of calculations of chemical reaction cross sections for potential energy surfaces involving these systems different transition state theories. Experiments This project performed accurate Ĵ ABSTRACT:

SSCRIPTORS: (U) 'QUANTUM CHEMISTRY 'CHEMICAL REACTIONS, REACTION KINETICS, QUANTUM THEORY, CROSS SECTIONS, HELIUM, ATOMIC BEAMS, HYDROGEN, ATOMS MOLECULES, METASTABLE STATE DYNAMICS, THREE DIMENSIONAL, POTENTIAL ENERGY SURFACES EXCHANGE REACTIONS, ANISOTROPY, MODELS DESCRIPTORS

IDENIIFIERS: (U) Atom Molecule interactions

SEARCH CONTROL NO. EVN54B DTIC REPORT BIBLIDGRAPHY

AD A173 294

20,4 215

CONTINUED AD-A173 294

WUAFOSR2307A4

TENNESSEE UNIV SPACE INST TULLAHOMA

Induced by Various Discrete Frequency Disturbances in a Aircraft Gas Turbines. Contamination and Distortion of Steady Flow Field ĵ

Annual rept. 1 Jan-31 Dec 85, DESCRIPTIVE NOTE:

18 1P APR 86 Kurosaka, M PERSONAL AUTHORS:

AF0SR:83-0049 CONTRACT NO

2307 PROJECT NO

Α4 TASK NO

TR 86-0820 AFOSR MONITOR

UNCLASSIFIED REPORT

IPPLEMENTARY NOTE: Original contains color plates: All DTIC and NTIS reproductions will b. in black and white SUPPLEMENTARY NOTE:

aspirition probe. Preparations for the search of negative explanation for (a) has been finished and it was found that the separation of total temperature and pressure is The objective of this investigations was aircraft gas turbines: (a) the total temperature and total pressure separation; and (b) the negative entropy spots. In the period covered here, the theoretical caused by the time-varying static pressure field around vortices; they were in favorable agreement with the entroly spots around vortices were also made. Keywords: aerothermodynamic effects of vortices as related to preliminary experimental results obtained by an to acquire a fundamental understanding of two Karman vortex street, negative entropy. ĵ ABSTRACT

ESCRIPTORS OUT +VORTICES, +FLOW FIELDS, +STEADY FLOW, AEROTHERMOCTNAMICS, AIRCRAFT, ASPIRATORS, CONTAMINATION, DISTORTION, ENTROPY FREQUENCY, GAS TURBINES, PRESSURE, PROBE, SEPARATION, STATIC PRESSURE, TIME, VARIATIONS, ENTROPY DESCRIPTORS (U)

Negative entropy, PE61102F ĵ IDENTIFIERS.

AD-A173 294

AD-A173 294

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EVN54B

28

SEARCH CONTROL NO. EVN548 DTIC REPORT BIBLIOGRAPHY

20:14 3.5 AD-A173 273

TUFTS UNIV MEDFORD MA DEPT OF PHYSICS

IDENT (FIERS: PEG 1102F IU: Compact Variable, Moving Sources on the Sun at 2 CM Wavelength,

VLALVery Large Array), Magnetograms.

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ACTIVITY, LOOPS, BREMSTRAHLUNG, SUNSPOTS, ELECTRON ENERGY, MAGNETIC FIELDS

CONTINUED

AD A1'3 279 ACTIVITY,

2

Willson Robert F Lang. Kenneth R PERSONAL AUTHORS

AF0SR 83 0019 CONTRACT NO

2311 PRCJECT NO

ζ TASK NO AF0SR TR 86 0987 MONITOR

UNCLASSIFIED REPORT

stars. In contrast, the short Wavelength 2 cm emission of resolution of solar microwave sources and opened the way resolution VAL observations of solar active regions at relatively long wavelengths of 6 cm and 20 cm have, for previously only been observed by Kiray telescope lofted above the Earth slatmosphere. The microwave emission of of Cincular polynization 80% to 90%, sources were found in regions of strong magnetic field estrength H about 2 Inngular sizes about 15 sec. I, highly polarized (degree provided valuable new insights into the nature of solar numerous VLA solar observations at 2 cm. there are only The high angular resolution provided by radiation and or the bremsstrahlung of million-degree In spite of counterpart of the ubiquitous coronal loops that had the Very Large Array (VLA) has permitted the spatial thermal electrons trapped within the loops by strong for comparisons with observations of similar angular active regions and eruptions from the Sun and nearby the coronal loops is attributed to the gyroresonant magnetic fields, observations of this emission have resolution at optical and X ray wavelengths. High two published results. In both instances, compact example, led to the discovery of the microwave solar active regions is poorly understood.

SCRIPTORS FOR PECTRA RADIATION (MICROWAVES SOLAR COPONE) EMISSION SPECTRA RADIG TELESCOPES, X RAYS, SOLAR DESCRIPTORS

AD A173 279

AD-A173 279

UNCLASSIFIED

29

EVN54E SEARCH CONTROL NO OTIC RECORT BIBLIDGRAPHY

AD-A173 278

ATLANTA SCHOOL OF PHYSICS GEORGIA INST OF TECH

Basic Expression for the Rates of Termolecular Recombination and Dissociation Rept for 1 Jul 85-14 Feb 36 DESCRIPTIVE NOTE:

Flannery, M. PERSONAL AUTHORS.

GIT-85-007 REPORT NO. AF0SR: 84-0233 CONTRACT NO

2301 PROJECT NO

M'ONI TOR

A4

TASK NO

TR-86-0969 AFOSR

UNCLASSIFIED REPORT

in Jnl. of Physics B: Atomic and Molecular Physics, v18 pL839-L844 1985 Pub SUPPLEMENTARY NOTE:

the diffusional and variational methods or from numerical It is noted that the usual identification bound energy level is appropriate to cases which involve recombination at time t with the downard current past a such as those nor QSS distributions obtained from both which is valid for both QSS and non-QSS distributions, state (QSS) condition to the exact master equation. A general expression for R superscript A (t) is derived energy distributions that satisfied the quasi-stermy of the rate R Superscript A (t) for termolecular approximation to the exact QSS condition. Ĵ ABSTRACT

TRANSPORT PROPERTIES, DISSOCIATION, DISTRIBUTION, ENERGY ENERGY LEVELS. EQUATIONS, VARIATIONAL METHODS, THERMAL 'RECOMBINATION REACTIONS, REPRINTS, ĵ DESCRIPTORS

WUAF0SR2301A4 _ _ IDENTIFIERS

AD-A173 278

20 € 14.2 AD-A172 276 DEPT OF MECHANICAL ENGINEERING NEW HAVEN OF YALE UMIV

·U: Proposal for Research Instrumentation

Final rept 1 Jul 83-30 Jun 84 DESCRIPTIVE NOTE:

13P DEC 85 Long, Marshall B.; Chang, Richard K PERSONAL AUTHORS:

Boa-Teh ;

AFJSR~83-0285 CONTRACT NO.

2308 PROJECT NO.

8 TASK NO

TR-86-0928 AFOSR MONITOR:

UNCLASSIFIED REPORT

scattering for temperature mapping in turbulent diffusion A summary is given of the progress to date different areas including: (1) high-speed mapping of gas A summary of research in these areas is given along with multipoint three-component velocities in a large volume. a description of future studies to be carried out using concentrations in turbulent flows, (2) use of Rayleigh obtained with DoD-University Research Instrumentation flames. (3) measurement of the full three-dimensional the equipment acquired under this program. Keywords: Program funding. Progress has been made in several using two new laser/multichannel detection systems scalar gradient in a plane, and (4) measurement of laser diagnostics

DIFFUSION, GRADIENTS, RAYLEIGH SCATTERING, SCALAR FUNCTIONS, THREE DIMENSIONAL, TURBULENCE, TURBULENT FLOW *INSTRUMENTATION, *FLAMES, *MAPPING, *TEMPERATURE. *DIAGNOSIS(GENERAL), *LASERS. ĵ DESCRIPTORS

PEG1102F, WUAFDSR2308A3 Ē IDENTIFIERS:

AD-A173 276

UNCLASSIFIED

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DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVNS4B

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

U: 29Si NMR Observation of an Unprecedented Rearrangement in Tetraaryldisilenes

5

PERSONAL AUTHORS: Yokelson, Howard B. : Maxka, Jim.; Siegel., David A.; West, Pobart.

CONTRACT NO F49620-86-C 0010

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR TR-86 0956

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Fub in Unl of the American Chemical Society, v108 p4239-4241 1986.

ABSTRACT. U. We report here the first observation of a facile intramolecular rearrangement of tetraaryldisilenes involving the exchange of two aryl substitutents between the silicon atoms of two aryl substitutents between disilenes were generated photochemically by inradiation of their trisilane precursors in protone solution at -60 c and the grude photolysates were constructed by Silicon 29 NNM in bronzers. Pure disilenes were produced by photolysis of trisilanes and gave in end case only a single Silicon 29 signal in the disilene region, at 63.68 and 64.05 ppm, respectively.

DESCRIPTORS OUT OSTLICON COMPOURDS, OAMYL RADICALS, OMOLECULAR STRUCTURE, OSPECTROSCOPY, NUCLEAR MAGNETIC RESONANCE, MOLECULE MOLECULE INTERACTIONS, EXCHANGE REACTIONS, PHOTOLYSIS, SILANES, REPRINTS

IDENTIFIERS (U) PE61102F, WUAFOSR2303B2

AD-A173 271 12/1

MICHIGAN UNIV ANN ARBOR DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

 $\{U^{\pm}\}$ Block-Oriented, Local-Memory-Based Linear Equation Solution on the CRAY-2.

AUG 86 5F

PERSONAL AUTHORS: Calahan, D. A.

PROJECT NO. 2304

TASK NO. A2

MONITOR: AFUSR

AFUSR TR-86-1039

UNCLASSIFIED REPOPT

SUPPLEMENTARY NOTE: Pub. in Proceedings of the International Conference on Parallel Processing, n.p. Aug 86.

ABSTRACT: (U) The performances of a number of algorithms for the solution of idense linear equations are presented for the CRAY-2. Measurements show as much as a 6:1 speedup of blocked algorithms over conventional vectorized Gauss elimination. Execution rates in the range of 400 M:LOPS are achieved.

DESCRIPTORS: (U) 'LINEAR ALGEBRA, ALGORITHMS, SUPERCOMPUTERS, SOLUTIONS, GENERAL), LINEAR ALGEBRAIC EQUATIONS, COMPUTER ARCHITECTURE, REPRINTS

IDENTIFIERS (U) CRAY 2 Supercomputer, PEST102F, WUAFOSR2304A2

DITC REPORT BIBLINGRAPHY SEARCH CONTROL NO. EVN54B

MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

(U) Off-Axis Electron Orbits in Realistic Helical Wigglers for Free Electron Laser Applications

DEC 85 7P

PERSONAL AUTHORS – Fajans, J., Kirkpatrick, D. A., Bekefi G

CONTRACT NO AFOSR 84-0026

PROJECT NO 2301

TASK NO AT

MONITOR AFRSR TR 86 0968

UNCLASSIFIED REPORT

laser beams of finite thickness, subjected to combined relical wiggler and axial guide fields, have been studied analytically. A semiempirical equation for the electron velocity components, averaged over the electron's cscillatory betatron motion, has been derived as a function of the radial displacement of the electron guiding center. The predictions from the equation are compared with single particle numerical simulations, and with free electron laser experiments. Good agreement is found.

DESCRIPTORS UPFREE ELECTRON LASERS, PLASER BEAMS, PUMPINGFELECTRONICS BETATRONS, COMPARISON, SIMULATION, GAIN, REPRIMIS

IDENTIFIERS OF Wiggler Magnets PEG1102F WUAF0S3233161

AD-A173 267 7/3

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) Cruciaromaticity in Organometallic Compounds.

9P

PERSONAL AUTHORS Dewar Michael J. : Healy Eamonn F. , Ruiz, James .

CONTRACT NO. F49620-83-C-0024

PROJECT NO. 2303

TASK NO B2

MONITOR - AFOSR TR-86-1058 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Pure and Applied Chemistry, v58 n1 p67-74 1986.

ABSTRACT: (U) A recent suggestion, that transition metal complexes of unsaturated ligands can be regarded as cruciconjugated, is explored by studies of various complexes of Fe(II), the aromaticity of the resulting playstems being analyzed in terms of PMO theory. This approach is also applied to porphyrin. The conclusions are supported by preliminary pi SCF and MNDO calculations.

DESCRIPTORS: (U) *ORGANOMETALLIC COMPOUNDS, *TRANSI'ION METAL COMPOUNDS, LIGANDS, METAL COMPLEXES, IRON, PORPHYRINS, SPIN STATES, COMPUTATIONS, REPRINTS

IDENTIFIERS: (U) Conjugation, PEG1102F, WUAF0SR230382

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SEARCH CONTROL NO EVN548 DITE REPORT BIRLINGRAPHY

Coronal Loops, VLA: Very Large Arrays!,

WUAFUSP2311A1

FF61102F

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AD A173 265 IDENTIFIERS

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MED ORD MA DEPT OF PHYSI'S TUFTS UNIV THE COTON !! SEMAS OF THE SUN AND NOTED STATE

12P SEP 86 PERSONAL AUTHORS - Lang Forneth P

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q nut that coureat The year lange Armay vid. has been used to ad ter sost of the minutely specify their elinia loops amile ind, and often assectivited with the appearand on magnetic field strength. The 20 im and 4 may emission of Correct to thoops and mich heretorors also properties constructly no than the property and primelt non no adt and within the male been cosmilate only with a captage sent observations are appoint to alread! To solution and the comprat plasma and then compared the concease of and) Short Structure nearby stars are discussed where research radiation Allensh are said builtif and par soo. Inobserve so in migrous a source with second of and 6 .d fo.o. shown the atmosphere Multiple washiength at A shagealing and things forth the quinescent legs of the ubiguiters coronal loops Singerther of the magnetic reald, in electron tepamenature of the place Corps The gention thermal ridistion megnasisems (9.5) the thermal ryclotron lines that Olivescent invission white 11so p Amplified augmetic fields or non required in some instance. This discussion of the 20 cm radiation processes strom to pressi! periodeau Corenal ABSTPACT

SPECTRA SOURCE CHOOSES PHOSICS FROM MAINETIC PROCESS FOR FREEDRING CONSTRUCTION PROPERTY. ELECTRON PROPERTY FREEDRING RESONANCE ROCKLATION HECPUMANES EMISSION - PROPONANCES EMISSION DESCRIPTORS

AD A179 255

AD A173 265

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AD A173 246 7 4

PITTSBURGH UNI. PI SURFACE SCIENCE CENTER

Wetastable Anguling Distributions from Electronic Stimulator Description

98 200

PERSONAL AUTHORS Alley Mark D. Oresser Miles J. Yates John I. Jr.

CONTRACT NO AFRISP 32 0133

PROJECT NO 2303

TASK NO A2

MONITOR AFRSP

HNOLASSIFIED REPORT

SUPPLEMENTARY Margon Publin Physical Review Letters, v56 n4 p367 370 27 day 85

ABSTRACT IJ Wo have for the first time measured by electron strend described metastable species from CD adsorbed on NI 119. The angular distribution of metastable described in normal direction as its also found for ionic describition products. This indicates that the metastable is repelled along the direction of the bond beign broken. We also observe an asymmetry in the attendance distribution which is correlated with the robstrate crystal structure. The metastable eviabits a maximum is its yield versus coverage.

DESCRIPTORS U DESORPTION CARBON MONOVIDE ANGLES ASYMMETRY AZIMUTH CRYSTAL STRUCTURE DISTRIBUTION METASTABLE STATE SUBSIRATES ELECTRON PRANSFER ADSORPTION NICHEL REPRINTS

IDENTIFIERS U PESTIOZE WUAFOSP2303A2

AD A173 255 11 4

TEXAS A AND M UNIV COLLEGE STATION DEPT OF MECHANICAL ENGINEERING

Un Delamination Fracture in Graphite/Epoxy Materials.

DESCRIPTIVE NOTE. Annual rept 1 Apr 85-31 Mar 86.

JUN 86 183P

PERSONAL AUTHORS: Sradley, Walter L.

CONTRACT NO AFOSR-84-0064

PROJECT NO. 2302

TASK NO. 82

MONITOR: AFOSP TR-86-0941 UNCLASSIFIED REPORT

Correlation Between Micromechanical Failure Processes and Personnel Associated with Research Effort: Presentations Laminates, A Comparison of the Chack Tip Damage Zone for Fracture of Hexcell F185 Neat Resin and TGC145,F185 and Failure Analysis, Publications Resulting in Whole or Characterization, Micromechanics Modeling, Fractography Micromechanics of Fracture in Toughened Graphite/Epoxy Statement; Summary of Accomplishments by Areas in Work Statement: In-situ Fracture Observations, Crack tip Composites with Distributed Damage using a J integral, the Delamination Fracture Toughness of Graphite Epoxy Composite, The Meaning and Significance of Hackles in Summary of Significance of Accomplishments; Papers: in Part from Work Supported by AFOSR; Professional The Relationship of Resin Ductility and Contents: Objectives; Summary Work Composite Delamination, Delamination Analysis of Strain Field Measurements Fracture Mechanics Composite Materials Failure Analysis. Composite,

DESCRIPTORS (U) (EPOXY COMPOSITES, (FRACTURE: MECHANICS), GRAPHITED MATERIALS, LAMINATES, LAYERS

IDENTIFIERS. (U) +Delamination, PE61102F, WUAFOSR2302B2

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AD-A173 255

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SEARCH CONTROL NO. EVNS4B DIIC REPORT BIRLIOGRAPHY

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

7/3 AD A173 252 20.2 20 12 AD A17 3 254

:U. A MINDO 3 Study of the Ethylene Dication (U) Strength and Structure of GA: 1 < [N:x: 35 : 110ys

OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

Quanterly rept no 3 1 May 31 Aug 86 DESCRIPTIVE NOTE

Faber Ratherine T. Hirth John P. PERSONAL AUTHORS

F49620 35 C 0129 APPA onthur 5525 CONTRACT NO

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** TLASSIFIED REPORT

ofth in addition Interpretativing of high temporature has boss results of Interperoge the most regent againsted that this study to better orderstand tha solid solition ofrengthening in The same elidizing permisibile Janas girens gann Francis of Posolved mount arouth intermediate temperatural bundening of these orders of magnified during and the few fried apprically report \$V55 \$1.50 11 11 The strengthening effect of gallium arseede b. Odum additions is under exempation. Sheetly dead from and in control ing Gads suggests that the THE STATE OF THE STATE OF THE TRANSPORT OF THE ad SECTIONS on the section raporty (southernord those discount of those dis mind it higher term The Constant of the collection have 4. Ad boscarsostes o designation done by reducts

MUIUNI - "SALECTOR TO SELECTION - INDIAN *STREMENTH MEGHANICS TEST METHOD, THEREOF, HIGH SHIJUM COMPRESSION CAMPERIES STRUMPLE MUSICINATION Sa(0141a(051))

PERTION WUAPTSE2912A3 LPN 05URF

Dewar, Michael J. (Reynolds, Charles H. F49620 83-C 0024 PERSONAL AUTHORS: 2303 82 CONTRACT NO.

PROJECT NO.

TASK NO MONITOR UNCLASSIFIED REPORT

TR 86 1055

AFOSR

Pub in Un! of Molecular Structure SUPPLEMENTARY NOTE Pub in Uni

harring a D sub 2d structure in which the methylery groups This gap has been filled by a recent ab initio investigation by Lammertsma et al im which, however, was carried out assuming its grometry to be the same as that of ethylore. Since the grometry was presented for the formation of the dication derived from demonstrated, its structure and other properties are of theoretical interest. The original report included the defent five stationary points were located, of which, ethylene Since this seems to be the smallest organic address either the structure or the properties of the results of an ab frutio calculation for the dication not optimized, this arounted to a calculation of the derived from ethylene four minima, corresponding to calculations are reported for the dication, C2H4+++ vertical double torization in ethylene and did not Mass spectral evidence was recently which the C2H4/+++ potential surface was explored definite minimum. species of similar energies, were located on the dication whose existence has been unequivocally are planar but orthogonal to one another only and proved to be corresponding potential surface ground state dication atsein howe.er ABSTRACT

SURFACES, GROUND STATE METHYLENES, IONIZATION, VERTICAL (U) - FETHYLENE, CATIONS, MASS SPECTRA DESCRIPTORS

AD A173 252

AD A173 254

337 3255C358

DITC REPORT BIBLIGGRAPHY SEARCH CONTROL NO EVN548

AD-A173 252 CONTINUED

ORIENTATION COMPUTATIONS, MASS SPECTROSCOPY MOLECULAR STRUCTURE, ISOMERS IDENTIFIERS U MINDO-Modified Intermediate Neglect of Differential Overlapi Dications, WUAFOSR2303B2, PE61102F

AD A173 251 7/3 20/10

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) MNDO Study of the Reaction of Tetramethylstannane with Bromine,

86 3P

PERSONAL AUTHORS: Dewar, Michael J. ; Kuhn, Daniel R. ;

CONTRACT NO. F49620-83-C-0024

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR TR-86-1057

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the Americal Chemical Society, v108 p551-552 1986.

ABSTRACT: (U) The mechanism of the brominolysis of alkyl tin compounds has been considerable interest to organometallic chemists primarily due to the observation of stereochemical inversion, as well as retention. at carbon under certain conditions. A wide range of mechanistic pathways have been proposed for this reaction, which has been found, in general, to be first order in both BrZ and the alkylitin. These proposed mechanisms included both concerted, stepwise, and charge-transfer processes. To rationalize the observed stereochemistry at carbon, three transition states (TS) have been proposed.

DESCRIPTORS: (U) +TIN COMPOUNDS, +STEREOCHEMISTRY.
+METHYL RADICALS, CARBON, CHEMISTS, ORGANOMETALLIC
COMPOUNDS, TRANSITIONS, BROMINE, CHARGE TRANSFER.
RANGE(EXTREMES), CHEMICAL REACTIONS, SUBSTITUTION
REACTIONS, COMPUTATIONS, MATHEMATICAL MODELS, REPRINTS

IDENTIFIERS: (U) MNDO/Modified Neglect of Differential Overlap), WUAFOSR2303B2, PE61102F

AD- A173 251

UNCLASSIFIED

SEAPCH CONTROL NO. EVNS48 DIIC REPORT BIBLIOGRAPHY

1.7 4.2 AD-A173 249

CONTROL DATA CORP. MINNEAPOLIS MN METEOPOLOGY PESEARCH CENTER (U) Variability of Turbulence, 4-20 Lp. in Colonado and Alaska from MST (Mesosphere) Stratosphere Troposphere) Radar Observations

14P MAY 85

Ecklund, W v: 6 192 1 Nastron, G D PERSONAL AUTHORS

ATMUSPHERIC MOTION, ARADAR REFLECTIONS

DESCRIPTORS: (U 'ATMOSPHERIC MOTION, 'RADAR RET TURBULENCE, ATMOSPHERIC REFRACTION, TROPOSPHERE, REGRESSION ANALYSIS, GRAVITY WAVES, TEMPERATURE, POWER SPECTRA, STASONAL VARIATIONS, PEAR VALUES.

VELOCITY BOUNDARY LAYER REPRINTS

squared with wind speed over monthlong periods ranges as high as 0.8 and has a median value near 0.3. During certain periods, 10 sub nisquared also depends on other

variables such as boundary layer inversions and gravity

wave activity.

the summer peak is believed to be due to convective activity. The correlation of 3 hour values of (C sub n)

CONTINUED

AD-A173 249

TEMPERATURE INVERSION

PEAK VALUES, WIND

WUAFOSR2310A1, Pe6110F

IDENTIFIERS: (U)

F49620 82 C 0029 CONTRACT NO

2.10 PROJECT NO

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TASK NO

TR 26 0971 AFOSB MONITOR

UNCLASSIFIED REPORT

Pub in Unl of Gnophysical Research 20 May 86 791 nD6 p6 72 8734 SUPPLEMENTARY NOTE:

The variability of small scale atmospheric sub-misquered to regard to be lognormal Thurng data at 4 min it is found that the visicorrelation function C sub a squared gan be modeled as the sun of a first near 5-3 and at periods less than 2 hours the spectral slope is Monthly mean vilues of logic sub-nisquared are from 25 to 45 and in the troposphere to about 18 min in squared follows a power law relation with frequency, at ingreased jet stepum and barocinise storm activity, and annual scale and at altitudes from atout 4 to 20 km is onden automognessive process and invador process. The associated integral time scale decreases with altitude maximum the contact and show a secondary maximum in studied using clear for Doppler rate data from Poker The variable the stritosphere. The power spectrum of log is sub ni turbulence on time scales from a fow minutes to the used for this study is the refractions turbulence structure constant of sub-misquirity the firequency the atticer peak is apparently unlated to and Platterille, column ensons of all altitures distribution of in Flat Algai 55 during all intervale. ÷

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EVN548 SEAPCH CONTROL NO. DITC REPURT BIBLIOGRAPHY

> 20, 12 AD-A173 245

STANFORD UNIV CA STANFORD ELECTRONICS LABS

Instrumentation for Research on Ultra-Small GaAs Devices <u>۔</u>

Final rept 16 Oct 85:15 Oct 86 DESCRIPTIVE NOTE

Harris James S PERSONAL AUTHORS N00014 83 K 0077, AFDSR-84-0253 CONTRACT NO

2917 PROJECT NO

2 TASK NO AFOSR MONITOR

TR 86 0816

UNCLASSIFIED REPORT

processing equipment for GaAs structures and devices this Research Instrumentation Program funded the purchase of processing facility is now completed and in operation. This grant, under the DoD University --ABSTRACT:

PROCESSING EQUIPMENT, STRUCTURES, PROCUREMENT, FACILITIES, PROCESSING, INSTRUMENTATION, UNIVERSITIES GALLIUM ARSENIDES. Ē DESCRIPTORS

WUAF0SR2917A3, PE61102F <u>-</u> DENTIFIEPS

11/6 AD-A173 245 ARIZONA STATE UNIV TEMPE COLL OF ENGINEERING AND APPLIED SCIENCES

Temperature, High Power Space Energy-Conversion (U) Investigation of Material Problems for High Systems

DESCRIPTIVE NOTE: Final rept. 1 May 93-30 May 86

415P

RSONAL AUTHORS: Jacobson, Dean L.; Morris, James F. Ramalingam, Mysore; Snir, Shlomo; Bice, Charles; PERSONAL AUTHORS:

AF0SR-83-0067 CONTRACT NO.

2308 PROJECT NO.

ž TASK NO.

TR-86-0819 AFOSR MONITOR

UNCLASSIFIED REPORT

emission microscopy, are presented. The influence of rhenium content in the range 3 percent to 30 percent, and temperature, between 1946 to 2339K in the work function are reported. The fourth section includes the The first one is an introduction. In the second the theory of dilute-solutions ultralloys from of tungsten-30 percent rhenium were investigated by using determination of effective work function, normal spectral tungsten sintering with special eutectic applications is presented, together with a comprehensive literature thoriated alloys, in the temperature range between 1400 alloys as determined in the Vacuum Emission vehicle. Finally, in the last section, the mechanical properties The final report has been divided in six microhardness of tungsten-rhenium and tungsten-rhenium-5 summarizes the research on the rhenium sintered alloys, obtained by using thermionic survey including 95 references. In the third one, the results for the work function evaluation of tungstencontent of rhenium in the work function of tungsten to 2500K Section No. 5 summarizes the research on influence of heating time, temperature and alloying an Instron tensile testing equipment with a high emissivity, recrystallization temperature and ĵ sactions section, ABSTRACT:

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PAGE

EVN548

SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIOGRAPHY

> CONTINUED AD-A173 245

strength yield strength, elongation and test temperature between the normalized Young's medulus, ultimate tensile temperature, ultrahigh vacuum system. The relationship was examined | Author |

EUTECTICS, ACTIVATION, MICHOSCOPY, THERMIONIC WORK FUNCTIONS TEST METHODS, HIGH TEMPERATURE "TUNGSTEN ALLOYS, "RHENIUM ALLOYS, HIGH VACUUM SPACE SYSTEMS, ENERGY CONVERSION <u>.</u> SINTERING DESCRIPTORS EMISSION

Ultralloys, WUAFOSP2308K1 PEG1102F IDENTIFIERS

7/3 11/9 AD-A173 242

TUCSON DEPT OF CHEMISTRY ARIZONA UNIV (U) Thermal Polymerization of Isomeric Dodecadiendiyndiols,

2 1P AUG 86

G :Burillo, S. Maldar N. N. Takeshi ; Marvel, C. PERSONAL AUTHORS:

AF05R-82-0007 CONTRACT NO

2303 PROJECT NO

82 TASK NO

TR-86 1017 AFOSR MONITOR

UNCLASSIFIED REPORT

compounds having two or more acetylene units. R (C triple acetylenic those polyacety lenes contain four or five conjugated acetylenic structure Has triple bond CanaH, and stable up to 2300 C reports have been published. In the case of diacetylenes, unique topochemical polyzerization in crystalline states. polymerization on standing. Jones and his coworkers have polymerization on standing, occupands including those synthesized many polyacetylenic compounds including those However, little has been studied on the thermal behavior greater than four and R=H, the compounds become unstable acaety ene. Although the relationships between stability was obtained by the oxidative degydropolycendensation of prepared diphenyltetraacetylene, which is stable in the dark. Korshak et al. have claimed that a polyyne with a and structure are not yet clear, all of these compounds bond Cin Ri has attracted much attention and numerous of these polyacetylenic compounds, except for diphenyl diacetylenes, although it is known that many of them are interesting as potential heat resisting materials n:2, the majority of studies are concerned with the simply undergo polymerization on heating. When n is and in many cases it is difficult to prevent their units linked to the terminal vinyl groups and are reported to be dangerously unstable. Nakagawa has Recently the polymerization of with high carbon contents

*ACETYLENES, *POLYMERIZATION, LINKAGES, Â DESCRIPTORS:

AD-A173 242

DITC REPUBLI 9131 19GRAPHY SEARCH CONTROL NO EVN548

AD-A173 242 CONTINUED

SOUND TANKS COMMANDED SOUNDED SOUNDS

CARBON HEATIMS VINYL PLASTICS, BIPHENYL, POLYMERS, HEAT THERMAL PROPERTIES HEAT TREATMENT THERMAL STABILITY, HEAT RESISTANT MATERIALS, ISOMERS

IDENTIFIERS U Dodecadiendiyndiols

HARVARD UNIV CAMBRIDGE MA

က 6

AD A173 241

(U) Geometric Problems in Adaptive Control.

DESCRIPTIVE "OTE. Final rept. 1 Jan 81-30 Apr 85,

APR 86 131

PERSONAL AUTHORS: Brockett, R. W.

CONTRACT NO AFOSR-81-0054

PROJECT NO. 2304

TASK NO. A6

MONITOR: AFOSR

TR-86-0967

UNCLASSIFIED REPORT

ABSTRACT: (U) Adaptive control has become practical in recent years because of the increased use of VLSI technology in implementing feedback control. The work described here has lead to the first proofs of convergence for some adaptive algorithms for stabilizing linear time invariant, but unknown, systems. It has also clarified robustness issues associated with this class of adaptive control algorithms. With the use of geometrical methods it has been possible to establish the impossibility of achieving several types of adaptive behavior. New directions for expanding the field of adaptive control have been explored. (Author)

DESCRIPTORS (U) *ADAPTIVE CONTROL SYSTEMS, APPLIED MATHEMATICS, ALGORITHMS, GEOMETRY, LINEAR SYSTEMS FEEDBACK, CONVERGENCE, SYSTEMS ENGINEERING

IDENTIFIERS (U) ROBUSTNESS, WUAFOSR2304A6, PE61102F

EVN548

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SEARCH CONTROL, NO. EVN54B DIIC REPORT BIBLIOGRAPHY

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL ENGINEERING

13/13

AD-A173 239

(U) Efficient Finite Element Methods for Transient

Analysis of Shells.

DEPT OF MATHEMATICS NORMAN OKLAHOMA UNIV U) Estimation and Control of Distributed Models for Centain Flastic Systems Anising in Lange Space Structures

Annual rept 1 Jul 84-1 Jul 85 DESCRIPTIVE NOTE

8 12

White Luther W PERSONAL AUTHORS

AFBSR: 84-0271 CONTRACT NO

2.04 PROJECT NO

< TASK NO

1P 35-0965 AF1)SR MONITOR

UNCLASSIFIED REPORT

made toward the goal of developing efficient and accurate estimation and control algorithms for elastic structures composed of beams and plates. Specifically, results were conditions for uniqueness in discrete versions of second control of the shape of statue beass and plates by means actuatons of small support and the optimal placement During the reporting prinod progness was order elliptic estimation of elactic apelficients for to control the sappy of prems and plates experimentation is currently being community to test These efforts have produced committee on which static and dynamic models of beams, and plates, the obtained that determine necessary and sufficient - Author methods and algorithms of anticators ABSTRACT

SCPIPTORS 19 SPACE SYSTEMS LONGEOUTHOURS. FLEXIBLE STRUCTURAL FLEXIBLE STRUCTURAL FLEXIBLE STRUCTURAL ALGORITHMS MATHEMATICAL MODELS, CONTROL DESCRIPTORS PLATES

Plange space structures, WUAFOSR2304A1. . = IDENTIFIERS PERTION

Final rept. Feb 81-Feb 84 Belytschko Ted F49620-82-K-0013 DESCRIPTIVE NOTE 2302 PERSONAL AUTHORS

CONTRACT NO.

APR 85

PROJECT NO

UNCLASSIFIED REPORT

TR-86-1009

AFOSR

<u>~</u>

TASK NO MONITOR

projections and through implicit projections by means of reduced integration; (3) the development of stabilization these modes. A control procedure has been developed which achieved in this project: it the identification of the membrane locking phenomenon which impedes the convergence Since these minimal quadrature elements possess spurious development of general methods for ameliorating membrane procedures for higher order elements such as the 9-node element which satisfy basic consistency and the patch large displacement, transient analysis of shells have been developed. The essential feature of these elements node triangle, and 2×2 quadrature in the 9-node element singular modes, their use requires effective control of convergence of the element 16.15 is achieved through a fields, honce these elements are called gamma-elements. Efficient and accurate elements for the special gamma-projection which is orthogonal to linear point quadrature in the 4-node quadrilateral or the 3is the use of minimal quadrature, which consists of 1 In addition to these developments, the following was satisfies consistency and hence does not impair the locking through both explicit mode decomposition of any fully integnated curved element; (2) the Đ ABSTRACT

SHELLS STRUCTURAL FORMS . STRUCTURAL ĵ. DESCRIPTORS:

AD-3173 240

AD: A173 239

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AD A173 237 21/2 1/4

ANALYSTS, SHEAR PROPERTIES, NODES, MEMBRANES

UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CT

IDENTIFIERS -U Membrane locking Transjent structural analysis, WUAF0SR230281, PE61102F

(U) Examination of Mechanisms and Fuel-Molecular Effects on Soot Formation.

DESCRIPTIVE NOTE: Annual hept, 15 Nov 84-14 Nov 85,

DEC 85 32P

PERSONAL AUTHORS: Colket Meredith B. III Seery Daniel

REPORT NO. UTRC/R85-957047

CONTRACT NO. F49620-85-C-0012

PROJECT NO. 2308

TASK NO. A2

MONITOR: AFOSR TR-86-1051

UNCLASSIFIED REPORT

have been pyrolyzed in a single-pulse shock tube over the temperature range of 1000 to 2400K and for dwell times of approximately 700 microseconds. Gas samples of reactant, intermediate, and final products were collected and analyzed using gas chromatography. Experimental data were used in conjunction with a computer model to develop (or confirm existing) detailed chemical kinetic models for several of the hydrocarbons that were pyrolyzed. Model results agreed well with experimental data not only for the decomposition of the parent compound and formation and decomposition of single-ring aromatic species. The formation processes are believed to lead to the production of polycyclic aromatic hydrocarbons, soot precursors, and eventually soot.

DESCRIPTORS: (U) +ACETYLENE, +SOOT, +BENZENE, +FUELS, +PYROLYSIS, CHEMICAL REACTIONS, MODELS, REACTION KINETICS, DECOMPOSITION, GASES, SAMPLING, AROMATIC HYDROCARBONS, POLYCYCLIC COMPOUNDS, PRECURSORS, COMPUTERIZED SIMULATION, GAS CHROMATOGRAPHY, HYDROCARBONS, PRODUCTION, TEMPERATURE

IDENTIFIERS: (U) WUAFOSR2308A2, PE61102F

AD-A173 237

SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOGRAPHY

च r 20.4 212 AD-A173 236

CA DEPT OF MECHANICAL ENGINEERING STANFORD UNIV

U) An Investigation of Flow Structure Mixing and Chemical Reaction in Combusting Tarbulent Flows

Reacting Flows, Turbulent Mixing, Flow

Structures, Unsteady Reaction Process, WUAFOSR2308A2,

ĵ

IDENTIFIERS

PE61102F

VELOCITY, VARIABLE PRESSURE, LASER INDUCED FLUORESCENCE

CONTINUED

AD A173 236

Annual technical rept | 1 Sep 84-31 Aug DESCRIPTIVE NOTE: 8 8

12P OCT 35

Cantwell Brian J Bowman, Chaig T PERSONAL AUTHORS

AF05R-84 0373 CONTRACT NO

5.52 PROJECT NO

A2 TASK NO

TR 86 1054 AFOSP MONITOR

UNCLASSIFIED REPORT

relationship between flow structure and chemical reaction conditions a very periodic and controllable flow suitable a planar laser induced fluorescence technique for radical species visualization in the flamo. Single-shot images of structure of the unsteady reaction process as it relates to the unstendy velocity field. The configuration chosen methane in the core flow and air in the surreunding flow Significant progress has been made in teh development of for study is a co-flowing non-preserved jet flame, with for conditional sampling can be produced Preliminary frequency the flowe breaks up into a periodic series initial avperiments show that under suituale forcing indicate that when the jet is forced at a particular results from single component verseity measurements An experimental investigation of the intersity on the jet axis is substantially reduced and the flow acceleration and turbulence structure in a combusting turbulent flow has been both CH and G2 fluorescence have been obtained in The objective is to study the spatial hydrocarbon air flames initiated flamelets

PLON STRUCTUPAL PROPERTIES CHEMICAL REACTIONS, MIXING CHENICAL RADIDALS, METHANE, AIR FLUW HYDROCAPBONS,

AD A173 236

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UNCLASSIFIED

EVN54

43

EVN548 SEARCH CONTROL NO DITIC REPORT BIBLICERAPHY

7/3 AD A173 224

> PLAMA PHYSICS LAB つ **Z** PRINCETON UNIV

Population Inversion and Gain Measurements for Soft X-Ray Laser Development in a Magnetically Confined Plasma Column

Final progress rept. 1 Nov 83-30 Sep 85 DESCRIPTIVE NOTE

85

Suckewer, Simon PERSONAL AUTHORS

AF0SR-84:0025 CONTRACT NO

PROJECT NO

A8 TASK NO MONITOR

TR-86-0825 AFOSR

UNCLASSIFIED REPORT

magnitude higher power density in the focal plane, 2) The line intensities as a function of time. 6: Modifications were made to the computer simulation code, and 7: Single time evolution of the laser pulse was improved. 3) Work continued on the jet stream gas target. 4) A number of carbon targets were developed and tested. 5) EUV axial and transverse instruments were modified for measuring ray laser experiments underway: 1: A new optical system was built for the CO-2 laser which allowed an order of pass gains of between 2 8 and 3 5 were made for various The following was accomplished in the x carbon targets SCRIPTORS UP CARBON DIOXIDE LASERS, *LASER TARGET INTERACTIONS LASER COMPONENTS, FAR ULTRAVIOLET RADIATION GAIN, X RAYS, COMFUTERIZED SIMULATION, PLASMAS/PHYSICS/, X RAY SPECTRA CARBON, FLUORINE, ALUMINUM, SILICON, DXYGEN, NEON, RESEARCH MANAGEMENT DESCRIPTORS

Laser Targets, Carbon DENTIFIERS (U) +X Ray Lasers, Targets, WUAFOSR2301AS, PEG1102F DENTIFIERS

DEPT OF INORGANIC CHEMISTRY (ENGLAND) BRISTOL UNIV Cyclisation of Metal Chain Complexes: X-Ray Crystal Structures of (Pt3W4)u-CR12-(u3-CR12)CO)8(n-CSH5)4) and (Pt4W4)u-CR1(u3-CR13)CO)8(n-CSH5)4) (R = CGH4Me-4). ĵ

Elliot, Gregory P. ;Howard, Judith A. ,Stone, F. G. ; Nunn, Christine M. PERSONAL AUTHORS:

AF0SR-82-0070 CONTRACT NO

PROJECT NO.

TASK NO

TR-86-0972 AFOSR MONITOR:

UNCLASSIFIED REPORT

Pub. in Unl. of the Chemical Society Chemical Communications, p431-433 1986 SUPPLEMENTARY NOTE:

prepared in situ from (Pt(cod)2), yields (Pt4W4(mu -CR) (mu sub 3 -CR)3(CO)8(mu -C5H5)4) containing a Pt4W4 ring; the structures of these metal cluster complexes have been established by X-ray diffraction. cyclo-octa-1,5-diene) reacts with (Witriple bond CR)(CO) 2(Eta-C5H5); to give (Pt3W4(mu sub 3 -CR)2(mu sub 3 -CR) The pertanuclear metal complex (Pt3W2(mu sub 3-CR)2(CO)4(cod)2(pi-C5H5)2) (R = C6H4Me-4, cod = 2(CO)8(Eta -C5H5)4), and the latter with (Pt/C2H4)3), ABSTRACT

SCRIPTORS: (U) *METAL COMPLEXES, *PLATINUM, *TUNGSTEN, *CYCLIC COMPOUNDS, MOLECULAR STRUCTURE, CHEMICAL REACTIONS, ORGANOMETALLIC COMPOUNDS, DIENES, REPRINTS DESCRIPTORS

WUAF0SR2303B2, PE61102F IDENTIFIERS: (U)

SEARCH CONTROL NO EVN54B DIIC PEPORT BIBLIOGRAPHY

12 1 AD A173 221 MISSISSIPPI STATE UNIV MISSISSIPPI STATE DEPT OF AEROSPACE ENGINEERING

through a Second Order Differential Geometric Model, Numerical Grid Generation in Arbitrary Surfaces

16P

Warsi Z PERSONAL AUTHORS

AF0SP 80 0135 CONTRACT NO

PROJECT NO

TASK NO

TP 26 1035 くろいせん MONITOR

UNCLASSIFIED PEPORT

in Unl. of Computational Physics, a Ca 754 r.1 ps2 og May 86 SUPPLEMENTARY MOTE

consequence of the terminate of Grand and thus darry with surface coordinate generation. The proposed equations are generation poth in simply and decise corrected regions on then so ved suserically to demonstrate its potential for them an explicit dependence on the accepture properties easy to solve and reguline only the coefficialism of the over equitions are redistribution have been preserved Extension of this coordinates in a gillen sunface has been developed and Proples of coordinate partial differential equations for the generation of In this paper a set of second-order some knews sunfices with the option of coundinate bounding the of to provide the Berry hat bounding not some arbitrarily chosen equations but are a technique to anothrany sunfaces commis to be of the alien curtace furthermore conditions for their solution. straightforwird \supseteq

AND PROCEDURES PARTIAL DIFFERENTIAL EQUATIONS CARTESIAN CORDINATES MATHEMATICAL MODELS PEPRINTS NUMERICAL METHODS -9PIDS-COORDINATES. Sectidations

3014 Generat ... PES1102F

AD A173 221

20/11 AD-A173 216 SOUTHWEST RESEARCH INST SAN ANTONIO TX

(U) Nonlinear Fracture Mechanics Analysis with Boundary Integral Method.

Final rept. 2 Apr 84-30 May 86. DESCRIPTIVE NOTE:

10 tP 86

Polch, E. < Cruse, T. PERSONAL AUTHORS:

SWRI -06-8044 REPORT NO. F49620-84-C-0042 CONTRACT NO

2302 PROJECT NO

82 TASK NO

TR-86-0862 AFOSR MUNITOR

UNCLASSIFIED REFORT

program was to extend an existing planar elastic fraiture mechanics analysis based on the BIE methodology to the reports on the use of the new BIE formulation for elastic and analytical study of the elastoplastic RIE formulation research to the problem of modeling crack extension under findings of the current research effort. The next section The first goal of the originally proposed The third proposed goal was to establish the credibility goal for the second year of the effort was to extend the finite element method for refined numerical analysis of formulation and applications. Included in this work are the preliminary applications of the new method to crack the nonlinear fracture mechanics problem, and to apply chack extension. This new result allows for the direct proposed goal was to establish (undamental results for crack tip elastoplastic behavior, based on a numerical of the elastoplastic BIE formulation relative to the the capability to important problems of fatigue chack elastoplistic conditions. This report summarizes key extension into prior plastic zones. The next section analysis of plastic zones around chacks. The second summarizes the basic two dimensional elastoplastic growth modeling for advanced serospace structures ABSTRACT - LUI

AD-A173 216

computation of crack weight functions. The last section

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SEAPOH CONTROL NO EVN548 DITC REPORT BIBLICHRAPHY

> CONTINCE AD A173 215

formulation is roted. Further work on the 3D problem is reports on move recent work, for the 3D RIE (nacture Some contrast with the 2D expected in the subsequent research program mechanics formulation

U FRACTURE MECHANICS CRACK AIPFRAMES, FATIGUE (MECHANIUS), ELASTIC PLASTIC PROPERTIES, CRACKS, MATHEMATICAL PROPAGATION PROPERTIES DESCRIPTORS

DENTIFIERS: 19 Crack Tips, 18oundary integral equations 18IE Boundary integral equations PEG1102F WUAF0SR2302B2 IDENTIFIERS

12, 1 13, 13 AD A173 215

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL ENGINEERING

Final rept. 1 Feb 83-30 Jan 84 Effective Finite Elements for Shell Analysis DESCRIPTIVE NOTE:

.

878 FEB 84

¥ Liu. X :Stolarski, H. Belytschko_T PERSONAL AUTHORS: Carpenter, N.

F49620-82-K-0013 CONTRACT NO.

2302 PROJECT NO.

8 TASK NO MONITOR

AF0SR TR-86-0891

UNCLASSIFIED REPORT

of shell elements, particularly in deep shells and in situations where the bending of the shell is the dominant mode of deformation. In this report, two methods for eliminating membrane locking in curved shell elements are Inextensional bending is an important mode of deformation Membrane locking severely reduces the rate of convergence Membrane locking occurs in curved shell elements when the der than the transverse displacement approximation and manner that parasitic shear causes shear locking, this -plane displacement approximation is not of higher inextensional bending of the shell cannot take place identified to be the phenomenon of membrane locking. and when an element is not capable of representing inextensional bending, parasitic membrane energy is generated in many modes of deformation. In the same One of the major difficulties in the formulation of effective shell elements has been spurious membrane energy causes membrane locking <u>5</u> presented

SCRIPTORS: (U) *SHELLS(STRUCTURAL FORMS), FINITE ELEMENT ANALYSIS, BENDING, DEFORMATION, MEMBRANES. LOCKING ELECTRONICS), SPURIOUS EFFECTS DESCRIPTORS:

PE61102F, WUAFSOR2302B1 Ē IDENTIFIERS

AD-A173 215

AD-A173 215

SEARCH CONTROL NO. EVN548 D'IC REPORT BIBLIOGRAPHY

AD A173 213

AEROCHEM RESEARCH LABS INC PRINCETON NU

United International Sout Formation in Flames

15 Sep 33:14 Sep Annual rept DESCRIPTIVE NOTE

30b MAR 36

Olson Ocuglas ١.. Calcote H PERSONAL AUTHORS

Ion Molecule Interactions, PE61102F

-

WUAF0SR2308A2 IDENTIFIERS:

ACETYLENE, OXYGEN, THERMOCOUPLES, MEASUREMENT, ION DENSITY, DECAY, REACTION KINETICS, FUELS, MIXTURES, LANGMUIR PROBES, SPECTROSCOPY

'SOOT, 'FLAMES, IONS, THEORY, RATURE, PROFILES, LOW PRESSURE,

COMBUSTION, TEMPERATURE

DESCRIPTORS

CONTINUED

AD-A173 213

AFROCHEM TP 455 REPORT NO

£49620-83 C 0150 CONTRACT NO

23.3 PPOJECT NO

42 TASK NO

TP 26 1005 3F03P MONITOR

UMCLASSIFIED REPORT

compensated electrically heated they occupies. With these the ultimity doal of this study. Experimental temperature s of and some sectional the sample that the temperature temperature profiles through a series of low pressure, 2 detailed computer matel of the process of soot formation threshold soot index were measured wing radiation loss 3 flamo data and langmain probe curves determined in these same ensurgeneits at the soot threshold of flames of varying pondentaling pays prepages the your may of sout, the a total to the exportmental temperature was a constant of them ion sampling ion condepination is greater than in condeptration of tes) programma agramma broduced the surprisme which indecates that con molecula reaction rates are acetylene oxygen flames on mother side of the Flores the absolute for concentrations were patained idicate the reactions which must be included in any 112 similar data sufficient to account for soot formation, thay also The ronic theory of incipient soot It wis thus demonstrated that the ton formation has been further evaluated Accurate shinastensiste times were dalculises for a phi Surfadae jast obtained by others daing a molecul (nese vor a to excellent agreemen) soot particles, and lons decay as mied dien a lange nange = William Participant ABSIPACT

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EVN54.

DITC REPORT BIBLIDSRAPHY SEARCH CONTROL NO EVN548

TENNESSEE UNI. FROAVILLE MEMORIAL RESEARCH CENTER AND Hospital

additional days of incubation at 37 C. Cell recovery from each of the three formycin derivatives was accelerated by

The capacity for cell division recovered during two

CONTINUED

AD A173 212

a simultaneous treatment with dilazep. The cell recovery

demonstrate toxicant selectivity for different cell types

technique is suggested as potential procedure to

*MEMBRANES BIOLPGY) + TOXICOLOGY

DESCRIPTORS

·LYMPHOMAS

U Fluorocarion Tosic int Action on a Membrane Channel. Effects of Formycin Derivatives, Cell Recovery and Detailibration DESCRIPTIVE NOTE Final technical rept 1 Aug 82-31 Jul

SEP 86 20P

PERSONAL AUTHORS - Wigher Paul W

BUFFERS, CONSTANTS, CONTROL, DETOXIFICATION, EMISSION, EXTERNAL, FLOW, FLUORESCENCE, FLUORINATED HYDROCARBONS, GROWTH/GENERAL), INHIBITION, NUCLEOSIDES, RECOVERY, TOXIC AGENTS, TOXINS AND ANTITOXINS, URIC ACID, VALUE

Formycin B, PE61102F, WUAFOSR2312A5

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I DENTIFIERS.

*FLUORINATED HYDROCARBONS, CELLS(BIOLOGY), CELL DIVISION,

DRUGS, FATTY ACIDS, AMINES, PURINES,

CONTRACT NO. AFOSP 82-0261

PROJECT NO. 2312

TASK NO AS

MONITOR: AFOSR TP:86 0926

7.86 0926

UNCLASSIFIED REPORT

PFDA for 24 hr at 30 C. There was no significant recovery L5178Y cells from treatment with three nucleoside toxins cells increased with AP was inhibited by the apparent inhibition constant value of 355 micromoles for however, recovery was significant after 6 days. Recovery activity of activity of the AP channel occurred in one day at 37 A one day treatment at 30 C with formyoin A, formyoin B, micromoles AP, put in a flow system, and AP efflux was estimated continuously at 21 C from the fluorescence emission of AP at 370 nm. The initial rate of AP efflux Treatment of L5178Y mouse lymphoma cells with perfluore nidecanoic acid (PFDAS) at 30 C produced of AP flux after 3 days at 30 C in fresh growth medium; Cell recovery studies were continued by experiments to on 5 decytoreyold A produced an appest in cest growth channel for AP in the membrane of LS178Y cells. The AP show the effect of the drug dilazep on the recovery of channel was markedly inactivated by 150 micrograms/m1 presence of unic acid in the external buffer with an unate. These observations indicate a unate-sensitive aminopuring (AP). The cells were preloaded with 100 of the channel was estimated from the efflux of inactivation of a charnel in the cell membrane; --for control ABSTRACT

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PAGE 48 EVI

SEARCH CONTROL NO EVN54B DITC REPORT BIBLIOGRAFHY

116 AD A173 211

CONTINUED AD A173 211

JENTIFIERS (U) (Fatigue crack propagation, Nicke) alloy LC Astroloy, Hot isostatically pressed alloys

DENTIFIERS

LEHIGH UNIV BETHLEHEM PA DEFT OF METALLURGY AND MATERIALS ENGINFERING

Metallunav Hot Isotatically Pressed Nickel Base Alloy A Study of Fatigue Chick Propagation in Powder . .

Finil rept. 1 Jan 53 30 Jun 86 DESCRIPTIVE NOTE

350 AUG

Hentzbeng Richard # PERSONAL AUTHORS

AF0SP 83 0029 CONTRACT NO

Ř PROJECT NO

TASK NO

7P 40 0420 C50 E5 MONITOR

UNCLASSIFIED REPORT

distribution of nounded cuboidal gamma prime precipitates Of mignometers did and prior particle boundary particles of MC - Zrd2 - alpha Al2G9 and M382, the majority of MC particles of vas provided y assume invertal blood they alue Parated & decreasing throshold delicational cien the ugic tatigum crack growth 2024 alumining office insets brigg measured values of son, Selta Kisubith alosure which had little influence on the crick growth rates, imprincibly crack alosure had little influence on 0 : micromaters edan dimension: "choling gamma prime"0 plosure no purposents and their pay of your of FCP rates Cymerteness specimen antificial appointy in the wake of the chack top in a were found to litry with specimen growerry with lower emprost to crack refreshing the nates nemained unchanged. The introduction of an dambides very not found in conjunction with Znôz L.C. Astroloy contains a complex sever I promitted which exist will values being responsibled with more With four point bend president to brigs. The present w Closume values differed exelectiv Mileab Salescappor with 3550 latel crace growth rates ABSTPACT

MOITAGATOR OF AGATION Charle Solve ALLE ALLEY CALLOUR MECHANIST Could aught id The 141

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SEARCH CONTROL NO EVNS4B DIIC REPORT RIBLINGRAPHY

AD-A173 210

CONTINUED AD A173 210

> PENNSYLVANIA STATE UNIV UNIVERSITY PAN DEPT OF MATERIALS SCIFNCE AND ENGINEERING

Containing Dispersed Phase Particles and Clunification (U) High Temperatule Oxidation Studies on Alloys of the Mechanism of Growth of Sid2 Annual rept. no. 1, 15 Aug 85 14 Aug 86 DESCRIPTIVE NOTE

EQUIPMENT, DRY MATERIALS, OXYGEN, HIGH TEMPERATURE, IRON, KINETICS, SILICON, MICROSCOPY, TEMPERATURE, OXIDATION, TEST METHODS RATES, MATRIX MATERIALS, NICKEL, THERMOGRAVIMETRIC ANALYSIS, SILICON DIOXIDE, PHASE STUDIES, SILICON NITRIDES, REACTION KINETICS, PARTIAL PRESSURE, SILICON CARRIDES

Dispersed phase particles, PEG1102F,

WUAF0SR2306A2 IDENTIFIERS

OXIDATION FIRON ALLOYS FUICKEL ALLOYS ALLOYS CHROMIUM PARTICLES COMPOSITION PROPERTY) COMMERCIAL

*COBALT ALLOYS, *DISPERSIONS

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DESCRIPTORS

Simkovich, G PERSONAL AUTHORS

2306 PROJECT NO

A2 TASK NO AFOSR MONITOR

TR 85 0836

UNCLASSIFIED REPORT

Si3N4 particles dissolved to a major extent in the matrix was found that the rates of oxidation were extremely slow unreacted Si3N4 and Si02. Kinetic studies were made at a circuiting of SiO2 layers growing on Sitor SiC or Si3N4) found to behave in a manner quite similar to that of the SiO2 alloys has also been investigated. The final effort the final alloy composition was iron + various levels of described in this report relates to the electrical short Thus. cobalt-chromium alloys. The exidation behavior of Ni-Crtemperatures at about 1 atm of dry oxygen. It chromium + silicon at a number of levels + particles of oxidation testss at 1000 C with P sub 02 approx. 1 atm. and were comparable to many of the slowest growing commercial alloys. Nickel and cobalt based alloys were matrix with variable additions of Si3N4 particles. The also tested with additions of Si3N4 particles and were temperature compound found in the SI-A1-0 N system, to conducted on alloys with various concentrations of the alloying elements chromium and /or silicon in the iron A relatively wide variety of oxidation tests were conducted on iron-based, cobalt-based and nickel-based alloys. Basically, these tests were iron based alloys described above. A small number of material and also reacted with any oxygen present Thermogravimetric Analysis, Microscopy were also made with additions of SiA10N, a high -number of ABSTRACT

AD-A173 210

AD-A173 210

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EVN54B

DIIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO EVN548

AD A173 205 9.1 14.2

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

 (U) Novel Application of the Quartz Crystal Microbalance to Study Langmuir Blodgett Films

,

AD A173 205 CONTINUED

'STEARATES, 'MICROPALANCES, 'CRYSTAL OSCILLATORS, QUARTZ, CRYSTALS, MASS, MEASURING INSTRUMENTS, SENSITIVITY, GOLD, MOLECULAR STRUCTURE, REPRINTS

IDENTIFIERS: (U) WUAFOSR230383, PE61102F

PERSONAL AUTHORS McCaffrey, Robert R., Bruckenstein, Stanley, Prisad, Panas N.

REPORT NO SUNT AB TR. 1

CUNTRACT NO F49620 85 C 0052

PROJECT NO 288

TASK NO 83

MONITOR AFOSE

TP 35 0954

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Langmuir, .2 n2 p228-229 1986.

microbalance. Sensitives on the order of this are readily An oscillating quartz crystal can be used steaminte monolayer and successively deposited multilayer Lingmuin Blodgott films. The determination of the mass deposited on provide useful information about molecular organization in queh films for example. with interesting electronic and optical properties. In quantz enystal microbalance technique to study calcium the sensitivity characteristics of the quantz Interest in as a very consitive mass measuring device because its this paper we report our initial results applying the given mass to the crystal surface. The application of this phenomenon is widespread and has lead to terming one can form highly ordered ultrasubmicron thin films resonance frequency changes upon the deposition of a crystal microbalance make it ideally surted to study function of the mass attached to the surface of the this use of a quantz chystal as the quantz chystal obtained and the change in frequency is a linear fractional monolayer and multilayor films Langmuir Blodgett films is Widesormad and յու գո**ւհ ք**յյաց

CRIPTORS 15 THIN FILMS, CALCIUM CLAPSUNDS,

AD-A173 205

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SCARCH CONTROL NO EVNS48 REPORT RIBLINGRAPHY 10

20 12 20.3 AD-A173 204 BUULDER CO ELECTROMAGNETIC NATIONAL EUREAU OF STANDARDS TECHNOLDGY DIV

*ELECTRICAL IMPEDANCE,

•ALTERNATING CURRENT, ELECTROMAGNETIC SUSCEPTIBILITY, HYSTERESIS, TRANSIENTS, LOSSES, MAGNETIZATION. MAGNETOMETERS, NIOBIUM ALLOYS, TIN ALLOYS, TIN ALLOYS

+SUPERCONDUCTORS,

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DESCRIPTORS

calculation, was developed

CONTINUED

AD A173 204

Susceptometers

Type 2 Superconductors, WUAFOSR2306C1, PE61102F

Magnetic Susceptibility.

IDENTIFIERS: (U)

TITANIUM ALLOYS

.U. Transient Losses in Superconductors

Final rept 1 Oct 82:30 Sep 85 DESCRIPTIVE NOTE

8 Z S S œ Goldfarb, R. PERSONAL AUTHORS

AFDSR-ISSA 82 00047 CONTRACT NO

2306 PROJECT NO

ΰ TASK NO AFOSP MONITOR

TR-86-0872

UNCLASSIFIED REPORT

critical state model. Minor loop hysteresis loss was shown to be obtainable by direct measurement of loop area from the imaginary component of ac susceptibility, and transport currents, losses in type II superconductors can relationships between ac susceptibility and magnetization as functions of dc field were examined in terms of the current density or full-penetration field. Hysteresis and with the predictions of Minervini's two dimensional model Hysteresis loss measurements in a series of fine filament losses at 4K measured by magnetization and ships between Nb3Sn superconductors showed that the effective filament internal fields in superconductors showed the importance correct analysis of magnetic data. A theoretical method Under steady state conditions, there are superconducting coil Jere found to agree substantially diameter is a function of interfilament separation and A review of of demagnetization factors and internal fields for the no losses in superconducting wires. However, when subjected alternating or transient magnetic fields or become significant. This report deals with hysteresis from the reversible susceptibility plus the critical transport losses measured simultaneously in a Nb-Ti ac susceptibility. The theoretical and experimental of calibrating ac susceptometers for cylindrical specimens, which is based on a mutual-inductance local area ratio of matrix material to Nb. ۔ ت ABSTRACT

AD-A173 204

EVN54B SEARCH CONTROL NO. DIIC REPORT BIBLIOGRAPHY

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7/4	
AD-A173 200	

OREGON UNIV EUGENE

(U) Krypton L-MM Auger Spectra: New Measurements and DEPT OF PHYSICS

86

Analysis

Sorensen Stacey L. Levin, Jon C. PERSONAL AUTHORS:

Chasemann, Bernd (Chen, Mau H. (Brown, George S.

F49620-85-C 0040 CONTRACT NO

2301 PROJECT NO

4.

TASK NO

AFOSR TR:86:0970 MONI TOR

UNCLASSIFIED REPORT

v33 n2 in Physical Review A. Pub SUPPLEMENTARY NOTE p968 976 Feb 86

Shifts are found to be significant. A proviously reported anomaly in the L2-M2,3M4,5 spectron may be due to a phase ground state correlation and Coster Fronig Fluctuation measured with good resolution and statistics and have intermediate coupling with configuration interaction, Krypton Limm Auger spectra have been been compared with relativistic calculations in error in earlier calculations. ABSTRACT

SCRIPTORS OUT TAUGER ELECTROMS, A PAY SPECTROSCOPY PRYPTON, AUGER ELECTRON SPECTROSCOPY, ATOMIC SPECTRA, RELATIVITY THEORY, ELECTRON ENERGY, ELECTRON TRANSITIONS DESCRIPTORS

DENTIFIERS (1) Coster Kronig Transition Probabilities. WUAFDSR2301A4 PEB1132F IDENTIFIERS

12/1 AD-A173 199

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES Extension of Three Theorems for Fourier Series on the Disc to the Torus ĵ

2 1 P OUN 86

G Miamee, A. PERSONAL AUTHORS:

TR-84 REPORT NO

F49620-82-C-0009 CONTRACT NO

2304 PROJECT NO

AS TASK NO

TR-86-0999 AFOSR MONITOR

UNCLASSIFIED REPORT

Pub, in Bulletin of the Australian Mathematical Soc ety, v33 n3 p335-350 Jun 86 SUPPLEMENTARY NOTE.

extensions of these theorems this role was played by half a theorem of Szego, and the fact that any function in H1 can be factored as the product of two functions in H2. Three well known facts of Fourier series on the disc are extended to Fourier series on the torus Here the role of negative integers is played by the lattice points in the third guadrant. In earlier į ABSTRACT

'FUNCTIONAL ANALYSIS SCRIPTORS (U) FOURIER SERIES, TOROIDS, HILBERT SPACE, REPRINTS DESCRIPTORS

Noneuclidian Geometry, Stationary Fields, Riesz theorem, szego theorem, WUAFUSR2304A5 PE8:102F IDENTIFIERS

AD-A173 200

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SEASON CONTROL NO EVNSAP PIE INGRAPHY ä

AD A173 190

OKLAHOMA STATE CHIV STILLWATER DEPT OF CHEMISTRY

Theoretical Studies of Vibrationally Assisted Reactions of the GS NO van der Waals Complex. ĵ

Thompson 1095 Arnold Craig Gettys, Nancy S Raff, Lionel M PERSONAL AUTHORS Donald L

ESCRIPTORS: (U) *EXCHANGE REACTIONS, 'OZONE, 'NITROGEN OXIDES, MOLECULAR VIBRATION, COVALENT BONDS, ENERGY TRANSFER, CHEMICAL DISSOCIATION PARTICLE COLLISIONS,

DESCRIPTORS: (U)

of the NO vibrational mode is found to be much less

CONTINUED

AD A173 198

predissociation on this potential energy surface effective in promoting reaction or vibrational

Van der waals forces, Internal energy

WUAF0SR2303A2 PE61102F

IDENTIFIERS

REPRINTS

AF05R-82-0311 CONTRACT NO

2303 PROJECT NO

A2 TASK NO AFOSP MONITOR

TR R6 0974

UNCLASSIFIED REPORT

in Unl. of Chemical Physics, v84 ITE Pub. 1 Apr 86. SUPPLEMENTARY NOTE n7 p3803-3813

significantly influence the dynamics in that partitioning reactions occurring under matrix isolation conditions and For predissociation bimolecular collisson dynamics. Model specificity is found for reaction vibrational predissociation, and intermode energy transfer. Structure specificity is also observed for the van der Waals complexes. In most cases, inference the intermode energy transfer rate. Excitation transfer step, and two RRKM steps is required to explain the asymmetric stretching mode of 03 is found to be the the overall reaction. Excitation of the hindered rotational of NO about the 03 symmetry axis is found to consisting of two non RRKM reactions, a non-RRKM energy SSTRACT: (U) The exchange reaction and dissociation dynamics of two 03 dot NO van der Waals complexes upon vibrational excitation has been determined at two and intermode energy transfer, the O bending mode is dramatically increases the predissociation rate and different internal energies form the results of quaisclassical trajectories. The dynamics for such usually the most effective. A five-step mechanism complexes is found to resemble that for chemical of less than 2" of the energy into such motion to be significantly different from the 03 + NO most effective in promoting reaction ABSTRACT

AD A173 198

EVN548 54

SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIOGRAPHY

AD-A173 197

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) MNDO Calculations for the Dehydrocyclooctatetraenes.

. ا Dewar, Michael J., Merz, Kenneth M. PERSONAL AUTHORS:

F49620-83C-0024 CONTRACT NO

2303 PROJECT NO.

B2 TASK NO

TR 85-1049 AFOSR MONITOR

UNCLASSIFIED REPORT

of the American Chemical Society, v107 n22 p6175-6179 1985. Pub in Jn1 SUPPLEMENTARY NOTE:

Hene benzocyclobutadiene MNDO predicts that MNDO, UMNDO, and MNDO/CI calculations are on disnotatory ring opening of beizecyclobutene are also parent didehydrocyclooctatetraene, which is known to exist. Two novel cyclic diallenes formed by connotatory reported for the four didehydrocycloociatetraenes and and bicyclo 5 1.0) octatetraene. MNDO predicts that bicyclo 5 1.0 octatetraene should be as stable as the predicted by MNDO to be stable spacies bicycle valence tautomens, pentalene ABSTRACT: (U)

HYDROGEN COMPOUNDS SCRIPTORS: U+ +CYCLIC COMPONATY +HYDROGEN COL BUTENES DIMERS COMPUTATIONS, ROTHERIS DESCRIPTORS

Octatetraenes (MOO: Modified Neglect of Differential Gyerlapi, Tautomers Pentalene WUAFUSR230382 PE61102F IDENTIFIERS

7/3 AD-A173 196

CA DEPT OF CHEMISTRY SAN DIEGO STATE UNIV

Gas-Phase Dyotropic Rearrangement of (Chloromethyl) dimethylsilane.

w PERSONAL AUTHORS: Martin, J. G. :Ring, M. A. ; O'Neal, H.

AF05R-83-0209 CONTRACT NO.

2303 PROJECT NO

TASK NO

TR-86-1065 AFOSR MONITOR

UNCLASSIFIED REPORT

in Organometal ics, v5 n6 p1228 Pub SUPPLEMENTARY NOTE: 1230 1986

neat reaction is shown to occur by two parallel reaction pathways, a concerted dyotropic rearrangement and a free-Studies of the gas phase isomerization of appears to be wall initiated, has rate parameters, log k sub chain ~ 9.42-43.000 cal/2 3RT. The dyotropic k sub I = 12 99 + or - 13-52 165 + or - 405 cal/2.303RT An activation energy of 11 k.al for the 1,2-Cl shift chloromethyldimethylsilane (I) to trimethylchlorosilane (II) in a static reactor (636-690 K) are reported. The relative to the reaction CICH2SiMe2 yields CH2SiMe2CI, relative to the chlorine abstraction reaction CICH2SiMe2 + CICH2SiHMe2 quenching with excess propylens, has rate parameters. k sub I = 12 99 + or = 13-52 165 + or = 405 call2 30 radical chain. The free radical chain pathway, which rearrangement pathway, isolated by maximal chain yields ClCH2SiMe2Cl + CH2SiHMe2 is deducad. <u>5</u>

ISOMERIZATION, VAPOR PHASES, MOLECULAR STRUCTURE FREE RADICALS. REACTION KINETICS, QUENCHING, STIVATION ENERGY · CHLORINE *SILANES, *METHYL RADICALS, ĵ DESCRIPTORS

WUAF0SR2303B2, PE61102F ĵ IDENTIFILRS

AD-A173 197

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> ÷ AD A173 194

>-MASSACHUSETTS UNIV AMMERST DEPT OF PRODE Computer Assisted Microscope for Adaptive Natuorik Research

86 1 Jun 85-31 May Final rept DESCRIPTIVE NOTE

J J

Moore John W PERSONAL AUTHORS

AF0SP 85 0079 CONTRACT NO

PROJECT NO

AFOSR MONITOR

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TASK NO

TR 35-0827

UNCLASSIFIED REPORT

this DoD Instrumentation Grant. The system is capable of phytometric image scanning of autoradiographic material Leitz MPV-DADS) was purchased with funds provided by These capabilities are essential for A computer assisted light microscope neuroshatomical research being conducted in two and very low power dark field and fluorescent laboratories at this institution photomicroscopy <u></u> ABST ?ACT :

SCRIPTORS 'U' COMPUTER APPLICATIONS, 'MICROSCOPES, IMAGES, ADAPTIVE SYSTEMS, AUTORADIOGRAPHY, DARKNESS, IMAGES, LABOPATORIES, LOW POWER, MATERIALS, NETWORKS, PHOTOMETRY, SCANNING DESCRIPTORS

Fluorescent Photomicroscopy . ت **Neurcanatomy** IDENTIFIERS

EVN54B

SPECTRON DEVELOPMENT LABS INC CUSTA MESA CA

Optical Technique for the Measurement of High Temperature Material Erosion

DESCRIPTIVE NOTE: Annual rept 1 Mar:31 Mrr 85

48P

D. : Azzazy, M. : Trolinger, J Arunkumar, K. PERSONAL AUTHORS: ۵

SDL-86-2439-03 REPORT NO. F49620 - 85 - C - 0046 CONTRACT NO

2308 PROJECT NO

A3 TASK NO

TR-86-1053 AFOSR MONITOR

UNCLASSIFIED REPORT

Using copper electrodes, glow discharge his been struck and characterized. Work done on an eroded electrode with also been proven that this interferometer can be used to This ability of the interferometer will be used in profiling surfaces A differential Michelson's interferometer surfaces, a discharge chamber has been built and tested. capable of measuring path length variation of the order of 0.002 microns has been developed and tristed. It has holographic interferometry shows that overall surface erosion of approximately lambda can be de ected using eroded electrically. To generate electricilly eroded measure surface heights on diffuse object: this technique. Ē ABSTRACT

(U) •MICHELSON INTERFEROMETERS. •HIGH SURFACE ROUGHNESS, EROSION, HEIGHT. INTERFEROMETRY, ELECTRODES. GLOW DISCHARGES. INTERFEROMETRY, ELECTRODES. COPPER, PROFILES RESOLUTION DESCRIPTORS HOLOGRAPHY

PEG1102F, WUAFUSR2308A3 ĵ IDENTIFIERS

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UNCLASSIFIED

EVN54B 56 PAGE

EVN54B SEARCH CONTROL NO. DITC REPORT BIBLIOGRAPHY

AD - A173 183

CA EDWARD L GINZTON LAB OF PHYSICS STANFORD UNIV

(U) Cryogenic Acoustic Microscopy

Annual technical rept 1 Apr 85-31 Mar DESCRIPTIVE NOTE:

35p

86

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Ouate C. PERSONAL AUTHORS

GL 4063 REFORT NO

1F0SR 85-0168 CONTRACT NO

2306 PROJECT NO

24 TASK NO

TP 85-0832 AFORE MONITOR

UNCLASSIFIED REPORT

The progress on the ultrachigh resolution generating coberent shund and superant butting bolometers P 2d sornid waves in is improved by no murian broper i. Three which will have Postsion operating in utilizing pinametric amplification of cound in liquid exposments to deseloping signer ficiency acoust a trinsducers for acoustic microscope is described. Two main areas are investigated signal to noise ratio and a mechanical he or sibility of 164 Finally. wider scamming range with great, invasion openessumized liquid Felium are also described 0: (7) scanner. The signalite noise natio mprove the SNR is here fan broidhing detealien of sound understand the effects of pressur design and delelopment of a new the propagation of high intensasupprefluid netium inclidescribed hellum to

SUPERFLUIDITY LIGUID HELLUM ELECTRONIC SCANNEPS, ACOUSTIC WAVES, SIGNAL TO NOISE PATIO, BOLOMETERS, ACOUSTIC DETECTORS, ACOUSTIC MICROSCOPES ZING OXIDES GALLIUM ARSENIDES DECORIPTORS

Supernorducting Boloneters PE61102F # JAF 05R2 706.42

AD A173 192

20/11 AD-A173 187 UNITED TECHNOLOGIES RESEARCH CENTER EAS HARTFORD CT

Un Plastic Strain Localization in Superalloy Single Crystals

DESCRIPTIVE NOTE: Final rept. Mar 83-Jun 86

102P

Giamei, A. F. Anton, D. L. PERSONAL AUTHORS:

UTRC/R86-916534-3 REPORT NO.

F49620-83-C-0104 CONTRACT NO.

2306 PROJECT NO

A TASK NO

TR-86-0821 AFOSR MONITOR

UNCLASSIFIED REPORT

their inhomogeneous deformation and poor fatigue behavior independent of alloy composition examined for slip distribution at very Figh magnification In this research, single crystal nickel alloys of various behavior is reflected in the location of initiation sites. enhancement of fatigue life was obtained, consistent with parameters led to the conclusions that it was possible to slip localization in superal tys is decreased moderately by misfit and significantly by larger volume fractions of Nickel-base superalleys are notorious for 50.4 under either monotonic or cyclic loading conditions are the strengthening gamma prime phase. This difference in The conclusion of this research was that the degree of initiation. Attempts to understand the brigin of such gamma prime volume fraction and misfit were deformed ponds by changes in solidification or heat treatient influence pore size or the volume fraction porosity, pones were always present. As a nesult, no The alloys with more localized slip showed surface Previous studies that the slip was 'placar' or coarse equivalently. ĵ ABSTRACT

SCRIPTORS: (1) *SUPERALLOYS, *STRAIN(#ECHANICS), *PLASTIC DEFORMATION, FATIGUE LIFE, SING E CRYSTALS DESCRIPTORS

DITTO DESIGN BIBLIDESATION SEARCH COLIROL NO EUNSAB

AD A 17 Y ST. CON TABLES

STRAIN RATE PLANAR STRUCTURES CYCLIC TEXTS GROWTH GENERAL COMPRESSION FORDSITY FATIGUE TEXTS MECHANICS CRACKING FRACTIONS NICKEL ALLOYS

IDENTIFIERS UP PESTIO2F, WUAFUSR2306A1

BATTELLE PACIFIC NORTHWEST LAB RICHLAND WI

(U) Electrical and Thermal Transport Property Studies of High Temperature Thermoelectric Materials

DESCRIPTIVE NOTE Final rept 15 May 83-14 May 86,

JUN 86 54P

PERSONAL AUTHORS Weben.W. J. B tes.J. L. ;Griffin,C. W. ;OLsen L. C. ;

CONTRACT NO. F49620-83-C: 0109

PROJECT NC 2308

TASK NO. K1

MONITOR, AFOSR TR:86-0822

UNCLASSIF LED REPORT

of small polarons as clarge carriers Experimentally, results show that the most effective divalent substitutes for Laland Y are Smart Cal respectively, due to similar ionic size. Both electrical conductivity and Seebeck both electrical corductivity and Seebeck coefficient. The additional substitution of Mn for Cr or S for Q decreased thermal conductivity generally decreased with temperature and dopant concentration. The dimensionless figure of divalent metal ions for La and Y results in the formation measurements were used to investigate the thermoelectric High-temperature electrical conductivity, coefficient exhibit be avior consistent with thermallylanthanum chromite and yttrium chromite as systems for testing proposed transport models. The substitution of Particular emphasis was placed on an investigation of properties of several refractory oxide systems Seebeck coefficient, and thermal conductivity activated transport by small polaron hopping merit for these oxides approached 0.2 at high temperatures.

DESCRIPTORS: (U) +TRANSPORT PROPERTIES +REFRACTORY MATERIALS +THEPMOELECTRICITY CHARGE CAR: IERS COEFFICIENTS ELECTRICAL CONDUCTIVITY EL.:CTRICAL PROPERTIES FIGURE OF MERIT HIGH TEMPERALURE IONS.

AD-A173 183

SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOGRAPHY

CONTINUED AC-A173 185 MEASUREMENT METALS MODELS OXIDES, SEEBECK EFFECT THERMAL CONDUCTIVITY THERMAL PROPERTIES, THERMAL RADIATION, VALENCE

'Thormoelectric Materials Lanthanum Chromite, ittrium chromite, Folarons, PE61102F --WUAF0SR2303E.1 IDENTIFIEPS

20/5 AD-4173 183

20/10

9/4

17/7

NEW MEXICO UNIV ALBUQUERQUE NM CENTER FOR ADVANCED STUDIES

Sensitivity Ring Laser Gyroscopes and Wave Detectors. (11) The Correlated Emission Laser - Towards High

Final rept. 1 Mar 85-51 May 86 DESCRIPTIVE NOTE:

114P

:Pedrotti,L. 0 Scully.M. PERSONAL AUTHORS:

AF0SR-85-0109 CONTRACT NO.

2301

PROJECT NO

Α8 TASK NO MONITOR

AFOSR TR: 86-0899

UNCLASSIFIED REPORT

addition, a preliminary experimental RLG effort has begun gyroscope experimental effort which was carried out at F. and the consequent development of the CEL concept this contract. Finally, we stadied in a somewhat general In addition to this fundamental research in the nature of the noise present in a neasurement of group for Inow defunct! large passive, resonant-ring manner the quantum distribution functions. Techniques topics. This includes acting as a theoretical support at the University of New Mexico under the auspices of we have carried out research in a number of related involved in this latter study are very useful in J Seiler laboratories at the Air Force Academy ' Author calculations of quantum noise ABSTRACT:

SSCRIPTERS. (U) RING LASERS (PHASE MEASUREMENT)
(DETECTORS, (NOISE, RADIATION MEASURING INSTRUMENTS)
(OUANTLA THEORY, (RADIATION MEASURING INSTRUMENTS)
(CAVITIES, GRAVITATIONAL FIELDS, HETERODYNING, GRAVITY MICROWAVES, POLARIZATION, SENSITIVITY, RADIATION PHASE SHIFT, GROUND LEVEL, SPACEBORNE, QUENCHING SPONTAMEOUS COMBUSTION, THEORY DESCRIPTORS

IDENTIFIERS (U) CEL (Cornelated Emissich Lasers), Passive Detectors GWD (Gravity Wave Detectors).

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ANSWAR ON TOURNEY FOR THE FOREST PROBLEM TO THE

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Padration Grassianional Boule effect loss a lense formant growing from a contrad doctors. Misseriappinal Gen. Gen. Gen. Gen. Gouantum Bost Lasers. HEL Promo Effect Lasers. Quantum Notice PEGINST WINTERSTORS.

DIAH UNIV SALI LAKI CITY DEPT OF CIVIL ENCINEERING

U Properties of Compacted Backfill Split Hopkinson Pressure Ban

DESCRIPTIVE NOTE: Final rept 1 Nov 82:28 Fab 85.

DEC 85 267P

PERSONAL AUTHORS: Olsen, Joseph M. ; Felice, Conrad W

CONTRACT NO AFUSR-83-0014

PROJECT NO 2303

TASK NO. B2

MONITOR: AFOSE

TR-86 0826

UNCLASSIFIED REPORT

blast loads. White soil response may be in the laboratory Soils have low wave speeds, nonlinear hysteretic behavior testing equipment. Various assumptions and considerations SHPB testing. Insight is provided as to how these factors structure and the surrounding soil and their interactions to measure the dynamic response of soil to impluise loads Hopkinson pressure bar (SHPB) technique has been adapted the data with soil as a specimen are discussed in detail stresses and strain rates that can be applied beyond the and low unconfined compressive strength which complicate Loading on buried structures subjected to governed principally by the initial gas porosity of the specimen. Examples of stress-strain curves are present for specimens with applied stresses ans strain rates up confinements magnitude of stress change, and the time scale of loading expected in the problem. The split involve in designing an SHPB experiment and evaluating The relative stiffness of the will determine the level and extent of damage due to this environment must be able to reflect the type of capabilities of conventional jaboratory dynamic soil this technique can significantly extend the range of nuclear or criventional high explosive weapons is strongly influenced by the backfill adjacent to and overlying the strucure. The relative stiffness of the dynamic soil stress-strain response was found to be affect experimental accuracy and data reliability. ABSTRACT: 'UI

DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN548

AD-A172 182 CONTINUED

to 520 MPa and 4000 s respectively

DESCRIPTORS. U. "PAGEFILLS "SOIL DYNAMICS IMPULSE LOADING DYNAMIC TESTS, DYNAMIC LOADS COMPACTING, DYNAMIC RESPONSE, LABOPATORY TESTS, SOIL TESTS, STRAIN RATE STRESSES RATES, COMPRESSIVE PROFEPTIES, STRESS STRAIN RELATIONS, SAND, POROSITY PORE PRESSURE

JDENTIFIERS () SHPB Split Hopkinson Pressure Bargi. Poorewiter Pressure PE61102F WUARDSP20382

AD-A173 181 20/10 774

TEXAS LNIV AT AUSTIN DEPT OF CHEMISTRY

U) MNDC Calculations for Compounds Containing Mercury,

85 4P

PERSONAL AUTHORS: Dewar, Michael J. ; Grady, Gilbert L. Merz, Keineth M. ; Jr. ; Stewart, James J.

CONTRACT NO F49620-83-C-0024

PROJECT NO. 2303

TASK NO. B2

MONITOR AFOSR TR-86-1058

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Organometallics, v4 mtl p1965 - 1966 1985

ABSTRACT: (U) The MNDO method is now established as a practical procedure for studying chemical behavior giving results comparable with those from quite good ab initio models (e.g., 4-31G) while requiring only one-thousandth as much computer time. MNDO his been parametrized for mercury Calculations are reported for a number of compounds of mercury. The results are comparable with those for other metals.

DESCRIPTORS UP **QUANTUM CHEMISTRY, PMERCURY COMPOUNDS, HEAT OF FORMATION, IONIZATION POTENTIALS, DIPOLE MOMENTS MATHEMATICAL MODELS, CHEMICAL, PROPERTIES MERCURY, COMPUTERS, TIME, METALS, REPRINTS

IDENTIFIERS (U) MNDO:Modified Neglect of Differential Overlapy WDAFOSR230382, PEST102F

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MASSACHUSETTS THAT AND TEAM CAMBRIDGE

Studies of the Auronal Zene Johosphere USING the Mithriet Data Base, Frecht Years 1983 1985

DESCRIPTIVE WITE FIRM FRONT ROOF 82-301 PS

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CONTRACT NO. AFOSR-83 0002

MONITOR - AFOSR TR 56 1067 UNCLASSIFIED REPORT

An extensive data set resulted from the campaign STRACT UP The Autospheric Science group participated in the multi-madar MITHRAS experimental cambaign with a variety of ground based and satellite experiments. Chatanika and EISCAT are about 11 hours apart in magnetic local time, and Millstone Hill precedes Chatanika and several campaign objectives. The overall MITHRAS program well suited to study the class of problems which involve and thermosphere were conducted using the European EISCAR incoherent scatter radars in conjunction space time differences. Set operating modes were used at the radir differ to best match the requirements of the widely spaced longitudes. Hence the MITHRAS program was radars wis able to study arunoal zone latitudes, but at was motivated by a desire to provide a well documented follows EISCAT by more than 6 hours. Each of the three set of midial observations of the mid and high latitude universal time iscal time ambiguities, or equivalenty, Millstone Hill Missachusetts Chatanika. Alaska, and analysis techniques appropriate for multi-instrument incohèrent scattér facialities would be available Coordinated observations of the Earth's tonosphere development of specific radar operating modes and ionosphere during the brinf interval when three Millstone Hill the MITHRAS program involved the magnetosphere ABSTRACT

DESCRIPTORS U FAURORAE, FRADAR REFLECTIONS INTO TOWNS OF THE TOWN OF THE STORMS. FREGION DATA BASES ELECTRON DENSITY. DIURNAL VARIATIONS. CONVECTICA, TRANSPORT PROPERTIES. RESEARCH MANAGEMENT

IDENTIFIERS OF Mothers Data Base

AD A173 179

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MINNESOIA UNIV. ST FAUL INST FOR MATHEMATICS AND ITS APPLICATIONS

ith. Scientific Computation and Mathematical Modelling

DESCRIPTIVE NOTE Final technical rept 11 dan 85-10 dan an

FEB 8G 9P

PERSONAL AUTHORS Miller,Willard , Ur.;Sell,George ; Weinberger,Hans ;

REPORT NO U OF M 0634-5139

CONTRACT NO. AFOSR-85-0118

PROJECT NO. 2:

TASK NO. A1

MONITOR - AFOSR TR 86-0966

UNCLASSIFIED REPORT

ABSTRACT: (U) This is the final technical report for an equipment grant which provided microcomputers in individual offices to be used as research lool. By faculty in the School of Mathematics and participants in the programs of the Institute for Mathematics and Its Applications Many research projects are underway also mathematical software is being developed for use in the Dynamical Systems. Stochastic Modeling and Combinatorics Laboratories. The microcomputers will soon be linked by an Ethernet and are serving as Terminals for access to the University's CRAY 2 supercomputer.

DESCRIPTORS: (U) (COMPUTER COMMUNICATIONS)
(CONFIGURATIONS MATHEMATICAL MODELS, MICROCOMPUTERS, COMPUTATIONS, MATHEMALICAL PROGRAMMING, SUPERCOMPUTERS, ACCRES

IDENTIFIERS: (U) CRAY 2 supercomputers, WUAFOSR23C4A1, PE61102F

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PAGE 62 EVN548

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SEAPCH CONTROL NO. EVN548 DITC REPORT BIBLIOGRAPHY

5 AD A 173 174

Un Changes in Sensory Responsiveness in Behaving Primates TENNESSEE CAIC MEMPHIS DEPT OF ANATOMY AND MEUPOBIOLOGY

DESCRIPTION AMOUNT technical rept Jul 35 Jul 36

(C)

Neison, Randall U PERSONAL AUTHORS

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PROGRAMMENT STATES REPORT

ognt to determine if The three main goals of our research this i to establish a functional behavioral and managers electrophysicalogical neconding suboratory 2 to transference more eye to perform a armoshed wrist and have any and managed and the representantion contines em esaul si minns, opents during Density of this agened Patrianie in the supposit a sensory . . . c. H. . are. for the on or and and compiles is sano de Augustaus sud Aubristaux de canes. the required to These toward react C SUPPLY TO SELECT Date of 44 5400 Car Car 18 Cons. 1 +124 UC111 in facility of the state of the state of the state of Carata Serve The second of the second of 0.1.44 The state of the s with the section of t : 1, u ; 1 1/1 1/1 1/1 VOSC DIEN HEBA Character than the 0.14...

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PARTICLA FARTERS TWO STRNITTER STONAL PROCESSING BOINTERS STORES HOUSE Section of all Six

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6, 16 AD- A173 170

CITY OF HOPE RESLARCH INST DURATE CA

(U) Long-Term Synaptic Plasticity and Learning in Neuronal Networks.

DESCRIPTIVE NOTE: Final rept. 1 Jun 83:31 May 86

14P

Brown Thomas H PERSONAL AUTHORS:

F49620-83-C-0121 CONTRACT NO

2312 PROJECT NO

7 TASK NO AFOSE MONITOR

TR 86 0835

UNCLASSIFIED REPORT

These included synaptic analogs to chassical conditioning understand the mechanisms by which use dependent changes in synaptic transmission can encode information into neunal networks. Our working hypothesis that guided this effort was that long term synaptic potentiation LIP: is an excellent candidate mechanism for information storage tissues, finind, the relationship between LIF and several in the nervous system. The project was organized around three interrelated effects. First, new experimental and theoretical techniques for analyzing winaptic function. thes and conventional methods were used to understand the biophysical and molecular forma, information encoding schemes was demonstrated enable the definitive tests of some leading theories postulate. The results add confidence to our working Hebb s postulate, and a modified version of klopf s mechanisms responsible for lTF in several different understanding of synaptic plasticity; and they will The purpose of this project was to hypothesis, they provide new insights into our were developed Second.

*HIPFOCAMPUS NERVE SELLS, POTENTIAL THEORY, INFOPMATION SYSTEMS: NERVOUS SYSTEM NEUROPHYSIOLGSY, LEARNING. *NEUFOCHEMICAL TRANSMISSION *SYNAPSE MEMORY: 28YCHOLOGY: PLASTIC PROPERTIES <u>.</u> DESCRIPIORS:

CHARGH CONTROL NO FUNDAR

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A PRINCIPLINATION OF THE CALG Syntability Prigory of the arituit Naci

.U Vibrational Participation in Chemical Reactions

CALIFORNIA UNIV. BERKELEY DEPT OF CHEMISTRY

DESCRIPTIVE NOTE: Final rept. 1 Nov 31 31 Oct 85.

<u>;</u> NUG 86 PERSONAL AUTHORS: Pimeritel, George C.

AF0SR -82-0031 CONTRACT NO

2303 PROJECT NO.

ģ TASK NO

TR -85-0824 AFOSR MONITOR

UNCLASSIFIED REPORT

of the olefic and, second, that the quantum yield is very strongly dependent on the recisy of the exciting photon. bimolecular reactions that can be excited with photons of understood aspects of the performance of the Mr chemical laser has been the role of rotational degrees of freedom laboratories under AFOSR support. Many laboratories have sufficiently low energy that the reactant energy level diagram is still sparse. A significant, perhaps crucial, Evidence for mode selective excitation of real successes. These reactions showed, first, that the reactions can be stimulated with tuned laser excitation either unimolecular reactions since tunable lasers have attributed to use of the solid inert gas environment at HE Rotational Lasers: One of the significant and least endeavored to demonstrate mode selective excitation of reactions, F2 + ethylene and F2 + allene, provided our Our first system selected for part of this technique is that notational degrees of study was the NO + O3 reaction. The fluoring olefin cryegemic temperature (12K) and investigation of come into the hands of chemists. Success can be in vibrational relayation. Namosecond Intrared bimolecular reactions has been obtained in our freedom are frozen out ĵ Spectroscopy

* REACTION KINETICS, * MOLECULE MOLFCULE INTERACTIONS, . MOLECULAR VIBRATION, . PHOTOCHEMICAL í, DESCRIPTORS

AD-A173 169

EVN548 SEARCH CONTROL NO. DIIC REPORT BIBLIOGRAPHY

> CONTINUED AD A173 169

CRYGGENICS DEGREES OF FREEDOM, DIAGRAMS, ENERGY, ENERGY LEVELS, ENVIPONMENTS, GASES, HYDROGEN FLUORIDE LASERS INTEX MATERIALS, INFRARED SPECTROSCOPY, LOW ENERGY, MOLECULES PHOTONS, OUANTUM THEORY, REACTANTS, CHEMISTRY: RELAXATION, POTATION SOLIDS, TEMPERATURE, TUNABLE LASERS. LASER APPLICATIONS, FLUORING OLEFIN POLYMERS CHEMICAL LASERS, CHEMICAL REACTIONS, DEGREES OF FREEDOM, DIAGRAMS, ENERGY, ENERGY VIBRATION, VIELD COLLISIONS REACTIONS

WUAF0SR2303B1 PE51102F _ IDENTIFIERS

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MASSACHUSETTS UNIV AMHERST DEPT OF POLYMER SCIENCE AND ENGINEERING

(U) Research Equipment: DoD URIP

15 Sep 84: 14 Sep 85 Final rept. DESCRIPTIVE NOTE:

AUG

Karasz Frank E PERSONAL AUTHORS

AF0SR-84-0307 CONTRACT NO.

2917 PROJECT NO

TASK NO

MUNITOR

AF0SR TR-86:0922

UNCLASSIPLED REPORT

The grant provided substantial funding for used by DoD related and other polymer science researchers a state-of-the-art transmission electron microscope and for a variety of spectrometric equipment and aperillary facilities. Both areas of instrumentation are heavily and both provide the most versatile and sophisticated instrumentation available ABSTRACT

SCRIPTORS (U) (POLYMERS INSTRUMENTATION, SPECTROMETERS, ELECTRON MIGPOSCOPES, UNIVERSITIES DESCRIPTORS

Transmission electron microscopes, URIP, PEG1102F, WUAFOSR2917A2 IDENTIFIERS

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Ammini technical rept. 1 Feb. 85-31 Jan DESCRIPTIVE NOTE

S S JN, Stillman Gregory E PERSONAL AUTHORS

1F05P 33 0030 CONTRACT NO

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UNDEASSIFIED REPORT

innectionscope to their based by the study of high purity findride vapor phase the analysti as comisble temperature Hall effect data to nottains roth organic chemical vapor deposition and rolebular prim to this growth techniques. This inally and itself of the begin used in combination with quantititi i vincivis the acceptor species present in dight constructions fasts. The independent of the amphanial of the amphanial of the amphanial of the different of the contactal. tow temperature photoluminescence GAAS grown by lighted phase apitaxial growth trytherial ---

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COLUPADO UNIV AT BOULDER INST OF BEHAVIORAL GENETICS

Organophosphates: Genetics Receptors and Antidotes

15 Sep 82-14 Sep Final progress rept DESCRIPTIVE NOTE

AUG RG

PERSONAL AUTHORS Collins, Allan C.

AF05R-82-0300 CONTRACT NO.

2312 PROJECT NO.

TASK NO

TR-86-0945 1.FOSR

MONITOR

UNCLASSIFIED REPORT

lethality. Those differences were not easily explained in Nicotine induced seizunes were studied as a model limited (perhaps one) number of genes and these genes also seem to regulate the number of appacampal picotinic terms of differential inhibitors of acetylcholibesterase AchE activity does not return to control levels in adult male mice but control levels are regained in reaggregate QNB binding did not return to control in strintum of OFP Inbred mouse strains were found to differ brain cultures and in 9FP treated mouse pups. Similarly, neceptons. Acute studies with DFP indicated that brain system for organophosphate induced seizures. Nicotine development suggests that BFF may cause thriversible induced seizures seem to be regulated, in the mouse, physiological effects elicited by DFP as well as in theated mice. This iplus the absence of tolerance in sensitivity to a number of behavioral and damage to mouse brain

*ANTIDOTES, TOXICITY, PROPYL RADICALS FLUGRINE, NICOTINE, CONVULSIVE DISORDERS, MODELS SENES CONTROL HIPPOCAMPUS, ACETYLCHOLINESTERASE, PRAIN DAMAGE CHOLINERGIC NERVES, CHOLINESTERASE INHIBITORS + CHEMORECEPTORS + GENETICS *ORGANIC PHOSPHORUS COMPOUNDS . = REPRINTS DESCRIPTORS:

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PAGE

EVN54B 96

SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIDGRAPHY

> CONTINUED AD A173 157

5/10 AD-A173 155

> PE61102, WUAFDSR2312ZA3 . ⊐ IDENTIFIERS

6/16 NEW YORK UNIV

≻ Z

(U) Neuronagnetic Investigation of Workload and Attention.

Rept. no. 1 (Final) 1 Jan 82-31 Dec 84, DESCRIPTIVE NOTE:

510 JUN 86

Kaufman Lloyd ; Williamson. Samuel J. PERSONAL AUTHORS:

F49620-82-K-0014 CONTRACT NO.

2313 PROJECT NO.

MONITOR

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TASK NO.

AF0SR TR-86-0913

UNCLASSIFIED REPORT

visual response to increquent stimuli presented under the positioning system, designed and constructed a device for we made major advances in the technology associated with University of Illinois in a study of P300 related to the During the period covered by this report, oddball paradigm. We collaborated on another experiment sensor system. Experiments during this period included one in which we demonstrated modulation of the EEG We also developed a high-precision sensor stimuli, i.e., the equivalent current dipole source of with the Cognitive Psychophysiology Laboratory of the cancellations in reducing unwanted effects of ambient accurately positioning the subject's head under the sensors, and developed advanced software for a multiconfirmed over earlier findings using abstract visual coincident with the onset of the N100 component of a The results demonstrution of the effectiveness of electronic neuromagnetic measurements. These included the P300 is in or near hippocompal formation. presentation of alphanumeric stimuli field noise. ABSTRACT ·

SCRIPTURS (U) *PSYCHOPHYSIOLOGY *WORKLOAD
*ATTENTION *PERFORMANNCE(HUMAN) *MAGNETOENCEPHALOGRAMS.
ELECTEUENCEPHALOGRAPHY COGNITION RESPONSE MAPPING.
MULTISENSORS HIPPOCAMPUS ELECTRIC CURRENT SIGNAL TO
NOISE RATIO VISUAL CORTEX STIMULI BRAIN DESCRIPTORS.

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IDENTIFIEPS Or thousanguetism Propy paradigms, ERP Event Related Potentials - Event related potentials PEGI102F WUAFUSR2317A4

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OPLAHOMA STATE UNIV STILLWATER DEPT OF CHEMISTRY

Ovnamics of Unimolecular Dissociation of Silylene,

PR 86 9P

PERSONAL AUTHORS: NoorBatcha,I.;Raff,Lionel M.;Thompson, Donald L. Viswanathan,R.;

CONTRACT NO. AFOSR-82-0311

PROJECT NO. 2303

TASK NO. A2

MONITOR: AFOSR

TR -86-1043

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UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical Physics, v84 n8 p4341-4346, 15 Apr 86.

ABSTRACT: (U) The semiempirical valence-bond surface formulated for the unimolecular dissociation of SiH2 has been fitted to an analytical function of the type suggested by Murrell and co-workers. The fitted surface accurately represents most of the experimental and CI results. The dynamics of the unimolecular dissociation of SiH2 to form Si and H2 have been investigated by classical trajectory methods on this fitted surface. The effect of describing the initial state of the molecule using normal and local mode approximations has been studied in spite of the presence of the product energy distribution is pound to be statistical Using the RRK model, the high-pressure limiting rate coefficient is found to be kiT, infinity) is as X 10 to the 12th power exp G1.6kcAL/MOL/RTs, which is less than the dissociation rate for SiH4. This has been attributed to the higher activation energy for SiH2 and to a statistical

DESCRIPTORS (U) +SILANES, +CHEMICAL DISSOCIATION, MOLECULAR PROPERTIES, SURFACES, TRAJECTORIES, REACTION KINETICS, COEFFICIENTS, ACTIVATION ENERGY, STATISTICAL PROCESSES, ENERGY TRANSFER, POTENTIAL ENERGY, VAPOR DEPOSITION, REPRINTS

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SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOCRAPHY

> CONTINUED AD A173 152

2/2 AD-A173 151

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CA DEPT OF CHEMISTRY STANFORD UNIV

WUAF0SR2303A2

'Silylene, PE61102F

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IDENTIFIERS

(J) Vibrationally State-Selected Reactions of Ammonia Ions. 1. NH sub 3+ (V) +D sub 2,

12P MAY 86 Morrison, Richard J. ; Conaway, William E. Ebata Takayuki ; Zare, Richard N. PERSONAL AUTHORS:

F49620-85-C-0021 CONTRACT NO.

2307 PROJECT NO.

A2 TISK NO

TR-86-1016 AFOSR MCNITOR

UNCLASSIFIED REPORT

Pub in Jnl. of Chemical Physics, v84 110 p5527-5535, 15 May 86. SUPPLEMENTARY NOTE:

has been applied to the production of vibrationally statewith a specific number of vibrational quanta in the v sub 2 umbrella bending mode. Thhe effect of vibrational excitation of this mode on the reaction of NH3(+) (X, v =(2) NH3D(+) having sufficient internal energy may decompose to yield NH2D(+) and this decomposition process is enhanced by vibrational excitation of the NH3(+) a D atom to form NH3D(+) is the dominant reaction channel Resonance enhanced multiphoton ionization of-mass kinetic energy range in a tandem quadrupole mass O to 9) with D2 is examined over the 0.5 to 10eV center-Under these concitions, (1) abstraction of insensitive to the vibrational excitation of the NH3(+). Ammonia ions are selectively formed reagent, and (3) NH2D(+) is also formed by direct hydrogen-deuterium exchange of NH3(+) with D2, but this ratio of NH2D(+) to MH3D(+) as a function of the NH3(+) A spectator stripping model is able to account for the channel appears as a minor contribution which is thanslational and vibrational energy. selected ion beams. spectrometer ABSTRACT: (U)

SCRIPTORS: (U) (CATIONS, AMMONIA, *PHOTOIONIZATION, 10N BEAMS, VIBRATIONAL SPECTRA, EXCITATION, DEUTERIUM, PINETIC ENERGY, EXCHANGE REACTIONS, REPRINTS DESCRIPTORS: (U)

AD - A173 151

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> FENTIFIERS : Ten maleguie interations Multiphoton ionization PESITU2E MUAFOSP2307A2 IDENTIFIERS

Solution of Hydrocarbons in a Hydrocarbon-Witer System with Changing Phase Composition due to Evaporation,

1AR 85 4P

PERSONAL AUTHORS: Burris David R. : MacIntyre, William G

CONTRACT NO. AFOSR-83-0036

PROJECT NO 2303

TASK NO. 82

MONITOR: AFOSR TF-86-0990

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Environmental Science and Technology, v20 n3 p296-299 Mar 86

ABSTRACT: (U) Pure water was brought into contact with a four component liquid hydrocarbon phase comprised of methylcyclohexane, ethylbenzene, tetralin, and 1-methylcyclohexane, ethylbenzene, tetralin, and 1-methylcyclohexane. The headspace above the hydrocarbon phase was continually purged with N2 to provide a controlled evaporative loss. Hydrocarbon concertrations in the water and hydrocarbon phases charged due to dissolution and evaporation and were measured as a function of time. A surface renewal mass transfer model is congruent with the observed hydrocarbon concentrations in the aqueous phase. Hydrocarbon-phase composition and component interactions are important in determining the time dependence of the aqueous phase composition. The results have implications concerning the fate of components of petroleum products discharged in the aquatic environment.

DESCRIPTORS (U) *HYDROCARBONS *WATER, *FHASE STUDIES, *EVAPORATION, LIQUIO PHASES, METHYL RADICALS, HEXANES, ETHYL RADICALS, BENZENE NAPHTHALENES, NITROGEN, PURGING, MASS TRANSFER, OIL SPILLS, REPRINTS

EVN548 SEARCH CONTROL NO DITC REPORT BIBLIOGRAPHY

12 - 1 AD-A173 146 NORTH CAROLINA STATE UNIV AT RALEIGH DEPT OF MATHEMATICS

Index Two Linear Time Varying Singular Systems of Differential Equations II õ

Campbell, Stephen t. PERSONAL AUTHORS

AF05R-84-0240, NSF-DMS83 18025 CONTRACT NO

2304 PROJECT

4 TAS< NO

IR-85 1040 AFOSR MONITOR

UNCLASSIFIED REPORT

Pub. in Circuits Systems Signal .5 rt p97 107 1986 SUPPLEMENTARY NOTE Process

a Fit where A tills singular and the system has index at most two are considered. Recent results on their analytic solution are improved on Champles are given that show differential equations of the form Ait's vitily Bitixity Linear time varying singular systems of these results are not easily extended ABSTRACT

DIFFERENTIAL Swildundi LINGAR SYSTEMS THINGA **EDUATIONS** DESCRIPTORC

Clinear Time Viscould Singular Systems WILLFOSR2301A1 IDENTIFIEPS

7/3 7/5 AD-A173 145

DEPT OF CHEMISTRY COLUMBIA UNIV NEW YORK

Modification of Chemical Reactivity by Cyclodextrins: Observation of Moderate Effects on Norrish Type I and Type II Photobehavior,

Sp 86

FSONAL AUTHORS: Singh Sharat ;Usha Govindarajan ;Tung Chen-Ho .Turro,Nicholas J. ;Ramamurthy,Vaidhyanthan ; PERSONAL AUTHORS:

AF0SR-84-0040 CONTRACT NO

2303 PROJECT NO.

82 TASK NO

TR-86-1020 AFOSR MONITOR

UNCLASSIFIED REPORT

of Organic Chemistry, ir. Jnl. Pub v51 n6 p341-944 1986. SUPPLEMENTARY NOTE:

alpha alpha-dimethylphenyl alkyl ketones incorporated in the hydrophobic interior of cyclodextrin cavities. It was anticipated that a cyclodextrin cavity might impose certain constraints on product formation from the type I possibilities by which photoreactivity can be modified studied With great interest in order to understand the features controlling the selectivity in the photobehavior of a number of phenyl alkyl kelones and The photochemistry and photophysics of studies have paved the way to an intriguing number of organic molecules in organized assemblies are being and type II processes, which these ketones undergo photoreactions brought about by these media. In this connection, we have investigated the

SCRIPTORS: (U) *PHOTOCHEMICAL REACTIONS, *KETDNES, *PHENYL RADICALS, *ALKYL RADICALS, CYCLIC COMPOUNDS, STARCH(S, CAVITIES, HYDROPHOBIC PROPERTIES, REPRINTS DESCRIPTORS: (U)

Photophysics, Cyclodextrin, PE61102F WUAFOSR2303B2 DENTIFIERS

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PIRSINIA FOLKET SAND IN TIAMO STALF UND BENCKSRURG SEPT OF ACENTRAL OF ACENTS AND STALF UND.

un Expanimental Study of Active Vibration Cunund

DESCRIPTIVE NOTE Armuni technical rapt i uam 84 39 dam 86

JUL 35

PERSONAL AUTHORS Hallager William L .un. Publis, Anthony

CONTRACT NO F49520 25 C 0024

PROJECT NO 270

TASK NO 81

MONITOR AFOSR TR 86 1003 UNCLASSIFIED REPORT

labonatony structures with a maneuverable rigid body mode The study as variable coturol frequencies, snop buckting, and other structure of moderate modal complexity lvery good agreement was achie od between experimental maasurements They exhibited some unusual dynamic characteristics such studies were conducted on three separate topics, all of which are relited to the dynamics and control of highly and theorntical productions. The type of active damping labonatony structures having a maneuverable rigid body Decause of its stability robustness The study of wave were build and analyzed. They were relatively simple planar structures composed of thin walled beam members applied cutput feedback with dual (colocated) control propagation is topised primarily on transfent flexural Complementary experimental theoretical flexible lang space structures (LSS) in Earth orbit candidate for implementation on firstigeneration LSS deselopment of small, flexible nerponse of a two dimensional grid structure to a active damping of vibrations; (2) structural wave propagation, and 3 development of small, flexib mode. In the action demping study on a laboratory sensons and actuators, should be considered as a is not completed, so results are not presented suddenly applied sinuspidal force at one point

AB A17% 144 CONTINUES

conlinearities. Finite element modeling generally failed to predict the measured vibration modes and the unusual characteristics.

DESCRIPTORS: (U) 'SPICE SYSTEMS, 'STRUCTURAL PROPERTIES, 'CONTROL SYSTEMS, DAMPING, VIBRATION, DYNAMICS, ACTUATORS, FLEXIBLE STRUCTURES, STIDS, WAVE PROPAGATION DYNAMIC RANGE, SPACECRAFT COMPONENTS, SATELLITE ANTENNAS

IDENTIFIERS: (U) LSS Large Space Structures), PE61102F, WUAF0SR2302B1

AD-A173 144

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! EARCH CONTPOL NO. EVN548 DIIC REPORT BIBLIDGRAPHY

Stanford University. The asymmetric nature of the mixing

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AD-A173 143

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FLOW RESEARCH CO KENT WA

SCRIPTORS: (U) 'FLAMES, 'JET FLAMES, COMPUTERIZED SIMULATION, DISSIPATION, FINITE DIFFERENCE THEORY, TWO DIMENSIONAL, CHEMICAL REACTIONS, ALGORITHMS, CHEMICAL REACTIONS, COHERENCE, COMPUTATIONS, DIFFUSION, EXTINCTION, FLOW, JET FLAMES, LABORATORIES, LAYERS, MATHEMATICAL MODELS, MIXING NUMERICAL ANALYSIS, QUANTITY, QUENCHING, RATES, PEACTION TIME, SCALAR FUNCTIONS, STOICHIOMETRY. processes has been numerically simulated. DESCRIPTORS: (U) Direct Numerical Simulation of an Unpremixed Jet Flame

Annual rept 16 Feb 85-16 Feb 86 DESCRIPTIVE NOTE

55P MAR 86

.≩ . Jou. W. H. Metcalfe, P. GIVILP PERSONAL AUTHORS

FLOW-TR-369 REPORT NO ₹49620 85 C 0057 CONTRACT NO

Diffusion flames, Flame liftoff, mixing

layers, reaction rates, temperature dependence

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IDENTIFIERS

STRUCTURES, TEMPERATURE

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73 TASK NO VFUSP MUNITOR

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UNCLASSIFIED REPORT

In the temporally evolving mixing used to study the effects of large congrent structures in locations whose this value is increased beyond a critical astruction is the local instantaments scalar dissipation monotion was incomporated rate a compuler code that uses two dimensional unpromised, chemically reacting mixing rate countrioned at the scalar storchrometric value. At primary important parameter to be considered for Hame obtained at the California Institute of (echnology and streets lending to the local quesching of a diffusion Direct numerical simulations have been leading to patially developing flows a two dimensional, hybrid pseudosfectral finite difference code was constructed The resulting code was tested with simulations of the a the results of these simulations are in layer diffulitions, a temperature depoydent chemical local quenching of the flame. Purposes of simulating layers under both temporally evolving and spatially The nonequilibrium go institue apprendent with record oscernophia) data pretransitions' region of laboratory mixing layers Hamp while insertigated. Pequits ingribate that the Franchastion of the Statistical quantities the local temperature decidates and the instantangous reaction rate drops to zero pspiraspectral numerical methods deseloping visumptions 911.61

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An experimental apparatus was developed to Conditions of things Perults indicate that it is bossible to lighery Worterey No. 0.30 Sind under these conditions. Significant perepaten pressure increases were prensures increases generally did not eccur, were about 0 31 1410 2 percent Bata analysis has provided several investigate francient and long-term ponewater pressure responses of saturated soils. The facility is capable of liquefaction. Samples of Water saturated Montercy No. 0.30 Sand ware assumed at samious relative densities and asperiagnes was one dimensional, contined compressive this increstigation represents an effort to examine and establish an underet ading of compressionally induced responsés et siturated soils. The facility is capable generating compressive shock loadings on the order of effective strassams Boundary conditions used for the 35000 FP. With millisecond rise times to peak stress effective stress and applied compressive strain One possible of a high desertios and high affective stresses. Liquotintion wis acternally observed at model uses an emounical scaling law for explosive strain indues todow duch substantial porewater Iquefaction potential as a function of density empirical models that can be used to estimate compressive iterins greater than about o t

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in the field from buried, contained charges in been performed. The analysis accounts for the nonlinear considers the saturated soil as a two-phase medium has inelistic heravior of the soil skeleton and his shown that liquefaction is dependent upon the unloading leadings to predict the extent of porewater pressure A finite difference analysis that constrained modulus of the soil. saturated soils 505104014

ISCRIPTORS TO SAND HIGHERCTION SOLI MECHANICS.
BLAST LOADS, TRANSIENTS FORE PRESSURE, SATURATION
OYNAMIC TESTS, LABORATORY TESTS, COMPRESSIVE FROPERTIES. WATER, STRESSES, ONE DIMENSIONAL, TWO PHASE FLOW, HIGH DENSITY, STRESS STRAIN RELATIONS UNLOADING, FINITE DIFFERENCE THEORY MODEL TESTS, SCALING FACTORS, MATHEMATICAL PREDICTION DESCRIPTORS

Ponewater pressure, Saturated soils WUAF0SR2307C1 (<u>C</u> IDENTIFIERS PE61102F

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

KMS FUSION INC. ANN ARBOR MI

(4) Red SOx (Singlet O)ygen/Laser A Chemically Pumped, 0 76 Micrometers Singlet Ovygen Laser

DESCRIPTIVE MOTE FINAL rept. 1 Jul 31 Dec 85.

IDENTIFIERS: (l) +0xygen Lasers, +Chemical Pumping, PE61102F, WUAFOSR2301A1

HETEROGENEITY, HIGH DENSITY, INVERSION, OXYGEN,

POPULATION

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FEB 86 37P

PERSONAL AUTHORS - Busch George E Jenichelbein, Mark B

CONTRACT NO F49520 35 C 0104

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i state oxygen was moscoed and was not found quenching of the state crygen by proped state exygen. The hate constants for quenching of bits by state oxygen and high depositions of as state oxygen unitially present. The measurements reported here support the feasibility of the laser based on production of ibs state singlet oxygen by the electronic energy pooling reaction or las state previous workers The results suggest that the extent of to be extromely large compared to the rate constant for singlet olygen was investigated. A microwave dischargered singlet evigen. End SOX: Nover and further research and devalopment coverd this goal is recommended. the effective population inversion or ib: state ovygen The teasibility of a red singlet exygen An upper bound for quantiting of the state agreed well with those measured by flow system for studying the cuenching kinetics of $(ar{\mathbf{b}})$ produced energy posting will not be suppressed by the state progen by ground state orygen was measured. state organ ins constructed with a linge diameter Viewing region so is to ensure that beterogeneous and (b) state ozzgen was quenching of both a Both rate constants UPINDOPENE /q 11-16/+0

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Pub in Surface Science Letters, v159 BILLY PROFINING WINDOWS pt.150 t466 10-6

direction of the set critical coverage feywords. Penning Is means of the combined use of metastable and electron stimulated desorption ion 120 P the CO angular monthemation [59]abi exidence has been found C 65 (1) No to an off normal for a never yet dependent he ensible bending geometry thanks to he for chemisorbed on the Nic High surface duerching confirsionpy (MOS - thermal despribtion spectromy), 700 nod plocing stimulated desprin in tilts from its surface normal . OB _xoudde_to_abueu acti phonisorprisor is a tiltal optional policy and the tiltal options of the tiltal options الاطف أبائل بالمائمي 20012110 COAPBON MONDYIDE CADSORDITION SURFACE CHEMICIAN, CHEMISGAPTION, NICHTE ORIENFALTON DIRECTION. AMGRES, OFSCHOFT ON PRINTELEUTION ELECTROMS IONIZATION LONS METANTOLE STATE OUENCAING SPECTROMPTRY STECTROSCOTT TOWERAITURE THERMAL PROFITES 10.01.005JQ

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ά (T) West Robert PERSONAL AUTHORS:

CONTRACT NO - F49620 83 -C - 0044

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82 TASK NO AFOSR MONITOR

TR 86 1015

UNCLASSIFIED REPORT

.3 p64 Pub. in L. Actualite Chimique SUPPLEMENIARY NOTE 70 1985

alternating phosphorus and nitrogen atoms in the backbore unusual constitution and behavior, and partly from their potential technological utility. Industrial applications the well known silicones so (as for polyesters, polyamides, etc.). Two classes of The polysilanes represent a new class of polymers which carbon atoms (as in viny) and diene polymers, or mainly with polymer chains made up of alternating silicon and may now be approaching commercialization, in which the and now being studied in laborateries in many pants of synthetic polymers based on inorganic main chains are Interest in the polysilanes derives partiy from their Most industrial polymers are of course carbon-based with main cabies consisting entirely of polymer chain is made up entirely of silicon atoms and the newer polyphosphazenes, with however commercially important Ē oxygen atoms. ABSTRACT

SCRIFTORS (U) POLYSTLANES, STLICON ATOMS, INDUSTRIAL PRODUCTION, UTILIZATION, SYNTHESIS, SILICON MICADELECTRONICS, REPRINTS PHOTORESISTORS. DESCRIFTORS CARB DES

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		TESTATION THAT OF SOME DATEMENT OF THEM STRY	Straight of Numerican of 128 Supercontaint find sub-13 to 55 to 5 sub-13 to 55 to 5 sub-13 to 55 to 5 sub-13 to 55 to 55 sub-13 to 55 to 55 sub-13 t		TO LOCKED METERS FOR THE PROPERTY OF A STATE	Figure 1988 and the second of			

Formation to the board of the proof to the control of the control A THIRD THOUGHT FOR Comparation of the property of Programme of the second State of the state 2 William Stranger

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PPLEMENTARY NOTE. FUB. IN Proceedings of the ALAA Guidance and Control Conference, p657,661 Jun 36 SUPPLEMENTARY NOTE

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PROGRAMMIND ALGORITHMS ASSEMBLY DEFECTORS, ERRORS FEEDBACK, MOTION OFF LINE SYSTEMS ROBOTS. SENSES-PHYSIOLOGY: SEQUENCES, SIMULATION, SPATIAL

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impionentina i figsing an interactive graphic offline prognamming stitem in lind WOPFMATE. Posults described in using kipiwais - s despiraca da assembly task requiring strongs of time and assembly their afterbourt. It describes invitial efforts of nethorem orthod aspide eloped for estimating compounded and reduced topolional uncentainties among sensors, nobots and objects based on their incrinidual uncertain soit at motivious tosses. This method is useful in table problems that make programming of flexible robotic deformiting of spatial empors in a planned task sequence deformation of a same) about moving manipulation will collabor. In motions of the method n annuation spend of 1 to 6 pictures sec of this the mentality of the mentality peretrating any of The method disconsisted to process and signification of the massemblator s will till firm viewplable tolerances 2 is fast bligger im while a SI clipping hardware in our silicon group or silicon group or 1915 inscring wars station was developed to maying stor herd when up an object. This error can be motion it superiment is efficing assessably programing This import summarizes research in some ione de eligaed, ustrag différent sonson which our griothically stimite the grasping error then a five technical papers include, in a powerful and BIVMAGOM WE For Annoyour the opinion set 10da111.0c STATUM COL

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to use the specifications of these devices and other high speed switching technologies in order to determine better designs and fundamental limits of the binary optical computing architectures under consideration

OPTICAL PROCE SING SCRIPTORS - U - SIGNAL PROCESSING - OPTICAL PROCE JI - HOLOGRAMS. - NONLINEAR SYSTEMS. + COMPUTER ARCHITECTURE. HYBRID SYSTEMS. - FOR GATES. DIGITAL SYSTEMS. ANALOG SYSTEMS. NAND GATES. REAL TIME. ARRAYS. DESCRIPTORS

MOW: Multiple Quantum Wells", Optical Binary Parelle! Output: Xom Gates, SBWP Space Elements, Ynor Gates, Optical Interconnections Arrays Einary: Parallel Inputs, Sequential Logic, Intercornection Holograms. Bistability PEG1102F WUAF9SR230581 Bandwidth Preduct: ٦ IDENTIFIERS comput:ng

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evacuation model to be used by the Air Force in forming a plan for the middle of warting casualties. This plan Kaphingtor proposed a research plan to netine the McLain nodel and computational varioustigate now algorithms for salaring the scorel. Mobalin and Commissed to collected the mathematical prodramming software. Bised on this working The mithematical model presented in this data and do oloped the model generator vinite Pennington algorithms This dissertation prisents a new technique o per and discussions with Lt Col McLain Professor ton solving your large multicommediaty metwork flow problems. Its problem is an extremely large cisualty would be the saw tog in gase of a European military and his students recentrasted alternative solution paper is boserd the state-of-the ant for existing conflict inch and insted States troops ABSTRACT

MILITARY PERSONNE, NETWORF FLOWS FLANNING STATES STAFFALL LAITED STATES PROCEETINGS CONFILL FIRITE CONCRAFINES MATHEMATICAL BOACH MIN STRUCK WOLLOW HILLAND LOUNG COLLEGE HOUSE CATAMAKABUGG

FEB 1021 WUATOSR2104A CHOLDIENSON

WISCONSIN UNIV MADISON DEFT OF CHEMISTRY

Possible Pi-Complex Intermediates in the Reaction of Disilenes with Mercury II. Iniflucroacetate

å 98 PEPSONAL AUTHORS Zybill, Christian | West, Robert

F49620-83-C-0044 CONTRACT NO

2303 PROJECT NO

TASK NO

AFOSR MONITOR

TR 86-1013

UNCLASSIFIED REPORT

Pub. in Unl. of the Chemical Society, Chemical Communications, p857-858 1986 SUPPLEMENTARY NOTE:

25 C produces 1,2-bis trifluoroacetoxy disilanes (5) and (6a b); below -15 C n.m.r. spectra indicate that an trifluoroacetate with disilenes and in tetrahydrofuran at intermediate is formed, for which structures (7) and (8a) alkenes form weak charge-transfer complexes with mercury alkenes with mercury(II) trifluoroacetate (1) in benzene formation of a Pe-complex mercurinium ion in the initial indicate that the initial reaction product is a o-bound compounds with alkenes is generally believed to involve step. Mercurinium ions have been observed by n.m.r. spectroscopy in superacid solvents at low temperatures. salts in dichloromethane The reaction of mercury(II) The well-known reaction of mercury(II) species, 121 Also fukuzumi and Kochi have shown that spectra of mixtures of simple and for special cases in other polar solvents. other hand the n m r. bi are proposed . : ABSTRACT

ALKENES, CHLGROMETHANES, MERCURY, SALTS, SPECTRCSCOPY, BENZENE, TONS, POLARITY, SOLVENTS, LOW TEMPERATURE, CHARGE TRANSFER LOW STRENGTH, SILANES, NUCLEAR MAGNETIC DESCRIPTORS (U) ** MERCHRY COMPOUNDS, *FLUORINE, ACETATES ** SILICON COMPOUNDS, *REACTION KINETICS. RESONANCE REPRINTS

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PITTSBURGH UNIV PA SURFACE SCIENCE CENTER 14.5

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An Enhanced Electron Stimulated-Desorption Ion Angular Distribution Method for Imaging Molecular Orientations of Adsorbed Species,

вр JUN 86

D. :Yates, J. T. : Alvey.M 7 Dresser,M. PERSONAL AUTHORS <u>۔</u>

AF05R-82-0133 CONTRACT NO

2303 PROJECT NO.

72 TASK NO

TR-86-1027 AF05R MONITOR

UNCLASSIFIED REPORT

of VAcuum Science IPPLEMENTARY NOTE: Pub in Jul of Vacuu Technology, vA4 n3 p1446-1450 May Jun 86. SUPPLEMENTARY NOTE:

evolitation process leads to intense and sharp Diff ESD.AD The resultant pure ESDIAD patterns show more quantitative details in high and low sign. I regions that has been seen obtained in electron-stimulated desorption ion angular distribution (ESDIAD). The improved method has been used The improved ESDIAD method involves the removal of Ni-110 which are induced by intermolecul, r interactions at high coverage. CO molecules adsorbed with normal C O pond orientations on ridge Ni sites till away from the normal by (or (19 degs in directions perpendicular to the ridges for CO coverages showe 0.75 CO (N). Evidence for the S.O tilting has also been studied as a function This has demonstrated that an 0-15! date. The angular distribution of the background effect is independent of electron energy and current density present in all photographic ESDIAD measurements made to STRACT: (U) A striking improvement has been made in the quality of positive ion angular distribution data electron impact on the metal surface, and is therefore to study configurational changes in chemisorbed CO on a soft xinay background signal which originates from of electron energy ABSTRACT peams

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 IDENTIFIERS (ESDIAD Electron Standlated Desorption Ion Angular Distribution, PEGA102F WUATUSR2303A2

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SPECIRGN DEVELOPMENT LABS INC COSTA MESA CA

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DESCRIPTIVE NOTE. CONAL Dept. 15 Jan. 83 15 Jan. 86.

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PERSONAL AUTHORS Hess, Cect' F

REPORT NO. SDL - 85 - 2286 - 15F

CONTRACT NO F49620 83-C-0060

PROJECT NO 2308

TASK NO A3

MONITOR AFOSR TR-86-0875

UNCLASSIFIED REPORT

research has been completed. The major accomplishments include: It Establishing the errors and limitations associated with the Visibility technique; (2) Development of two new techniques to submicron particles; (4) Extension of techniques to nonspherical drops; (5) A solid spray diagnostic capability which has been synergistic with many programs from other agencies of the Air Force AEDC, BMD, Wright-Patterson), the Sovernment and Industry. The new techniques have been applied to the measurement of sprays and solid particles with accuracies better than 10% and dynamic ranges between 10 and 30. Complex bimodal trimodal and quadramoda, distributions have been measured with an accuracy and resolution exceeding all available techniques. Reywords: Particle velocity, Mass flux, Nonintrusive, and Advanced laser diagnostics.

DESCRIPTORS (U) (MASS FLOW, YSPRAYS, AEROSOLS, OPTICAL DETECTION, SIZES(DIMENSIONS), LASER APPLICATIONS, DYNAMIC RANGE, ACCURACY, DIAGNOSIS/GENERAL), DROPS, DYNAMIC PAMGE FLUX-RATE), LASERS, LIGHT SCATTERING, PARTICLES, SOLIDS VELOCITY, VISIBILITY

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DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN548

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PEG1102F, WUAFOSR230PA3

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IDENTIFIERS

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF MECHANICAL ENGINEERING

(U) Transient Catalytic Combustion.

DESCRIPTIVE NOTE: Annual rept. 30 Sep 84-30 Sep 85.

JAN 86 23

PERSONAL AUTHORS: Santavicca, D. A.;

CONTRACT NO. AFDSR-84-0224

TASK NO. A2

2308

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UNCLASSIFIED REPORT

was found to depend both on the surface reartion rate and the mass transport rate. The transient ignition the peak substrate temperature to move further toward the measurements also clearly revealed the fact that complete the front end of the catalyst. The downstream end of the catalyst heated up more slowly and was strongly dependent nate controlled at higher velocities (above 2 m.s) but at ratic and gas velocity on the ignition transient were investigated. The ignition process was characterized in terms of the substrate axial temperature profile and the Increased inlet temperature, equivalence ratio lover velocities (below 2 m s) the initial ignition rate exhaust gas CD and CD2 concentrations measured as a function of time after the fuel was turned on Ignition was always found to occur first near the leading edge of presented. The effects of inlet temperature, equivalence initial ignition rate was found to be surface reaction substrate temperatures increased velocity also caused Results of an experimental study of the the catalyst as indicated by the more rapid heat up of the transient and to lead to increased steady state peak platinum in a stacked-plate catalytic combustor are d velocity were all found to shorten the ignition catalytic ignition of lean propane-air mixtures on on convective heat transfer from the front of the back of the catalyst. For the conditions studied. catalyst

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converse Construction of the variable temperatures which is provided the variable temperature of the variable temperature of the variable of t

DESCRIPTORS COMPRESTION, TANITTON CONTALYSIS, FUTLS PRODUME FOR AIR RATTON PLATINUM COMBUSTORS, TEMPERATURE GALIOS TAN FLOW FLOW RATE, EMMANST GASES, CARBON FONDINGE CONCENTRATION CHEMISTRY CONVECTION HEAT TRANSFER TURBULENCE FLAME PROPAGATION

IDENTIFIERS U WUAFOSR2308A2 FE61102F

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CALIFORNIA UNIV. SANTA BARBARA DEPT OF CHEMISTRY

.U. Erergy Dispos I in Ion Molecule Reactions: Experiment and Theory.

DESCRIPTIVE NOTE: Final rept 15 Nov 81-14 May 86.

AUG 86

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PERSONAL AUTHORS: Bowers Michael T ;

CONTRACT NO AFOSR-82-0035

PROJECT NO. 2303

TASK NO B1

MONITOR AFOSR TR-86-0936

UNCLASSIFIED REPORT

ABSTRACT (U) During the tenure of this grant work was accomplished in 3 areas. A. Determination of Energy Disposal in Simple Unimolectlar and Bimolecular Reactions B. Determination of the Effects of Internal Energy on the Rates and Branching Ratios of Bimolecular Reactions. C. Determination of the Dynamics and energy Disposal in the Photodissociation of Simple Cluster Ions. Kinetic energy measurements on the products of reactions of C+ Superscript 2F with 02 and NO were also initiated.

DESCRIPTORS (U) CHARGE TRANSFER (REACTION KINETICS)
DETERMINATION ENERGY KINETIC ENERGY DISPOSAL CHEMICAL
REACTIONS PHOTODISSOCIATION CLUSTERING CARBON,
SULFITES OXYGEN NITROGEN OXIDES MOLECULES DYNAMICS,
INTERNAL MEASUREMENT RATIOS IONS

IDENTIFIERS (U) (Ich Molecule Interactions, Internal Energy WUAFGSR230381, PES1102F

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SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOGRAPHY

MICHIGAN STATE UNIV EAST LANSING TURBULENCE STRUCTURE

PROPERTIES, REYNOLDS NUMBER, PRESSURE DRAG REDUCTION

CONTINUED

AD-A173 091

STRUCTURAL GRADIENTS IDENTIFIERS: (U) WUAFOSR2307A2, PE61102F

Experimental Investigation of the Jurbulence Production Mechanism in Boundary Layers

Annual rept 1 Oct 84 30 Sep 85 DESCRIPTIVE NOTE

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Falco R PERSONAL AUTHORS

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menyment for creation of vortex rise like typical eddies and have demonstrated the eccumency. I both within a tructinal model This model de reass ves tax importance missional throat that has been foreed so as to provide the ISTRADIT OF OUR THE PAST YEAR WE have discovered the mechanism of production of the long streaks and a superiments' deformination of the resisting importance of ു. Rrynolds number merions and to control the production of turbulence and layers is for from complete, and conversely little of longs reduce drag. In the proposed neseasch we want to s for determinand how much leadings we have in our nost tumbulent boundary layer. These aspects w<mark>ere the</mark> minimagniets appeaded to complete the conceptual of harrons confidence in wall layer trimenors. However What we have learned so far the Feyneld, number dependence or pressure gradient Sous on acquiring additional data to support the singests second critical parameters that ead be orthologiandery layer turbulycos ments of the elements of the meder toban all the madel

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effort underther to understand the response of ytterbium effects and effect of matrix property variations were examined in detail. Quasi static experimental methods and related analysis were developed to determine the complete maternal constants regreed very well with the shock wave measurements. Using the analytic model a good ass extended to include strain hardening in a consistent Pesidual resistance measurements, loading rate The objectives and results of a research interest The phare minological model developed earlier charioterizing conditions. Experiments were designed to conform closely to the requirements of the theoretical Plate impost experiments using materials that stress transducers under shock loading are presented manner The model predictions, using the appropriate performed to determine the gauge response under well set of electro mechanical constants for the foils of colered i wide marge of mechanical impedances. Were professionaling of yitan' um stress transducers was SISVIEUE ABSTRAUT

*TRANSBUCERS CONSTANTS ELECTROMECHANICAL DEVISES, GAGES RATES RESIDUALS PESPONSE -MATRIX MATERIALS + RESISTANCE SIPESSES THEORY MATERIALS MATHEMATICAL MODFLS MICHANICS SEWBOLKB BENVE ADUITS. LOADS FORCES. SHOOF WALES INDMINISTING IN DESCRIPTOPS

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INTEGRATED SYSTEMS INC PALO ALTO CA

Adaptive Control Techniques for Large Space Structures

Annual rept 1 dun 35-31 May 36 DESCRIPTIVE MOTE

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The Lange Space Structure (LSS) research inchessing concern that performance rebustness of Air program was amighted to formulated in mappings to

Forch USS systems would be inadequite to meet mission objectives. Indeptarenties in both six in dynamics and distinbuter inequites characterizations, both time varying

and standards uncertainty signit, and, timit the conformation (targets with first pin (1903) and appring a conformation of the dipting

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point theorems for stability analysis of adaptive systems, systems. Transient analysis of adaptive control, Fixedand Stability theory for adaptive systems.

STOCHASTIC PROCESSES REAL TIME, ON LINE SYSTEMS, SYSTEMS SCRIPTORS: (U) *ADAPTIVE CONTROL SYSTEMS, SPACE SYSTEMS, NONLINEAR SYSTEMS, DYNAMIC RESPONSE, STABILITY, CALIBRATION, TRANSIENTS, PARAMETRIC ANALYSIS, EXCITATION, ENGINEERING, ALGORITHMS DESCRIPTORS

Robust control Systems, Uncertainty, Nonlinear control, PE61102F. Un Large space structures. WUAF05R2302B1 IDENTIFIERS

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from a buried loss missional explosive of cylindrical shape tidies when periodes of a reinforced connects structure to such a pressure wite loading lusing sing in of testing concrete specimens up to 75 mm Setemmine display, itrength properties for selected types elastic poster fronte element computer program to determine to total propose for a concrete steel finite element mentore of Sombre all of these into a simple stress transmitted to a burned wall by the pressure wave struction) is disting program to determine the response of nessandh brognin wheke abjectives were to 1. Develop a Incorporate the strength properties so signal difference computer codes and incorponating seme producting the time of membense observed in expenseats computation is mothed was developed for calculating the localized impulsive loads. A split Hopkinson's pressure ban of the preferrory decamic concrete material property is built. The system and prosedures are ending function for close proximity explosions, (2) samenta and grown to published results the centra mass not proved to be effective in 4 Use a structural analysis determinad vito a localized failure criterion for 7) s report describes a threa year underground changlanes reinforment namenete A CONTRACT NO. 25 of concrete Company Company Special Pod

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remogable up to twice the static values. Additional results or high strongth plans concrete and on SIFCON slumy and itrated tiber concrete, are reported.

UNDERGROUND STRUCTURES, IMPULSE LOADING, BURIED OBJECTS
COMPRESSIVE PROFERIES, COMPUTATIONS, COMPUTER PROGRAMS,
CONCRETE, CYLINDRICAL BODIES, DYNAMIC RESPONSE DYNAMICS
EXPLOSIONS EXPLOSIVES, FIBERS, FUNCTIONS, HIGH STRENGIH,
PRESSIRE RESPONSE SHAPE, SHOCK WAVES, SLURRIES, STATICS
STRENSTH-MECHANICS, STRUCTURAL ANALYSIS, STRUCTURAL
REPOSIONS FETCTS, DYNAMIC LOADS, FALURE (MECHANICS)
IMPACT STRENGTH, PLASTIC PROPERTIES, ELASTIC PROPERTIES
FINITE ELEMENT ANALYSIS, STEEL STRESS ANALYSIS
MATHEMATICAL PREDICTION PRESSURE MEASUREMENT

IDENTIFIEPS: (U) Split Hopkinson Pressure bars, Sifcon(Slurry Infiltrated Fiber Concrete), PEG(102F) WUAF05R2302G2

and and may result on four Finds of high strength concrete

William Terranda Sandani Jumer Compression

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FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

Seme Observations on the Use of Photoacoustic Spectroscopy for Flame Elemental Analysis,

t. T PERSONAL AUTHORS Lanauze, J. A.; Winefordner, J. D.

CONTRACT NG F49520-84-C-0002

PROJECT NO 2300

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MONITOR: AFOSR

TR-85-1030

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SUPPLEHINTARY NOTT. Pub in Spectrochimica Acta, v418 n4 p407-412 1986

ABSTRACE: (U) Photoacoustic spectroscopy has been applyed for the first time as a cenhique for elemental analysis in fishes. The limit of detection achieved for Na was 780 hg ml. For Mn. Sr. If and Ca. the synsitivity was found to be very poor as componed with Na. But no profunction is syariable at the moment. Photoacoustic spectroscopy is not expected to be as sensitive as any of the non-veryinting spectroscopy: techniques for elemental chains of the sign o

DESCRIPTION - JULY FOUNDATING ENDANGESTON SPECTAL FLAMES, LASER BUMPING, SODIUM MANYARESL STROWTON TANITALUM CALCIUM ACQUSTOOPTICS PLAN RESCLUTIVA (LUORESCENCE REPRINTS

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the Study of Mean from Path Effects on Growth of Ultrafine Metallic Aerosols

DESCRIPTIVE NOTE Annual rept 1 May 85-30 Jun 86

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Moore John W PEPSONAL AUTHORS

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ISTRACT: Us Neurobiological investigations of adaptive neural networks were conducted using the classically cerebellum and brain stem Information from physiological studies has been incomponated into mathematical models of characteristics of neurons with activity corrolated with the NM CR or , is inhibition. A second appreach involved interconnectivity among brain regions essential for the the use of discrete brain lesions that selectively eliminate the MM CR while at the same time sparing the learning One experimental approach involved recording from single brain neurons from awake, behaving animals NM CR. These regions include discrete portions of the bisic reflex pathway. A third approach employed Liber tracing anatomical techniques designed to clarify the conditioned nictitating membrane response and CR of anatomical findings have guided the development or related neuronal models. Revuonds. Neurophisiology a widely used model system for studies of learning used by adaptive network researchars for the purpose of determining the loci and Neuroanatomy rabbit

DESCRIPTORS (U) (NERVE CELLS) (NEUROPHYS.OLOS)
(LEARNING, (CONDITIONED RESPONSE, ADAPTIVE SYSTEMS)
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LESIONS MATHEMATICAL MODELS MODELS NITWERS NEURAL

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Unitroestigation of Superradiant LDV Markers and Three-

DESCRIPTIVE NOTE Annual rept 1 Jan-31 Dec 85.

Component Velocity Mapping.

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PERSONAL AUTH RS Chang, R. chand R

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and opinion technologue will on the petential and moviding of the Hough thanstoom which is well known in the pattern interaction with micron size dranlets flowing in a linear bi stade about the secondary in trucks are being anifyzed by a novel application dos i thest Considerable effort was dovoted to despiousing Peuts Franker nelographic reperaments are quarently under droplet chaps 4 spherical and congraint Passan mixing the standed particles as a cold flow the observed The major progress in the first year of Cohorent in spinored it. The passibility of providing chamical protognable of laking drapints neveal that the laser constraint relocity are pring in three dimensions. Motivated by our interest in finding bright ed drappets from the continued the st. By of lasting droplets. Mignified AROSR support has been made in the area of laser fluorescent morkers for LBY in Fruments, ve hale radiation is confirmed just within the Inquier air receass transference in this results replets led us to or scattering. processor ration the droplain cotonica Thetrer thy actual intestionie fae stimulaied 5 suncting admittal cation of 1 pantingar optical spectra o anti s sins Raman scatterin stream ABSTAACT 111111

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Unification and Fracture Machanics of Structural Metals. Plastics, and Composites

DESCRIPTIVE NOTE: Final rept 31 Jan 85-24 Jan 86.

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PERSONAL AUTHORS: Hertzberg Richard W.

CONTRACT NO AFOSP-85-0138

PROJECT NO 3483

MONITOR AFOSR

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TASK NO

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UNCLASSIFIED REPORT

ABSTRACT: (U) AFOSR/DDD-URIP funds were used to purchase an Instron computer-controlled mechanical test system for the purpose of evaluating the fatigue and fracture response of metals, plastics, and composites. The FCP Fun program provided with the test system has been modified to include differing testing options (constant K sub max and constant K sub mean decreasing K threhold procedure) and incorporate stress intensity factor and compliance calibrations for several additional specimen configurations Experiments have been conducted with both plastics and metals to confirm the unsefulness of the system and the modifications of the software.

DESCRIPTORS: (U) *FRACTURE(MECHANICS).
 *FATIGUE(MECHANICS), PLASTICS COMPOSITE MATERIALS, TEST METHODS TEST EQUIPMENT, COMPUTER APPLICATIONS. COMPUTER PROGRAMS METALS, MODIFICATION RESPONSE. STRESS CONCENTRATION STRUCTURES

IDENTIFIERS -U - WUAFOSR3483A3, PE61102F

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 \Box Research in Image Understanding as Applied to 3. Michaels Capaghabhic Imaging with Wesh Ostical Respiration

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PFFA: was exposed to three tissue culture cell lines, PTR2 kidney BP! buffalo rat liver: and M9 clone 9, cat liver: and moreograms ml for recovery after chotobleaching (FR4P) was used of examine cell membrine fluidity, specifically with respect to the membrane Tiplids Results demonstrated that PFDA affects the fluidity of both liver lines but not the Kidney line are more straiters than Mg. The increased REDA induced appares useful er screening agants for remboune erfects betwhen the responsiveness of the two liver lines. BRL membrane fluidity was transient recovery occured by 48 The compound perfluoro-ry decanote acid rm following removed of the PFDs The FRAP technique 24 hr time periods. The technique of luorescence differential sensitivity was observed as well as elucidating mechanisms of agent action ⊃ funthermone

FAITY ACIDS DIFFERENTIAL CROSS SECTIONS FLUIDS FLUEDS MEMBRANES, MEMBRANES, MEMBRANES, MEMBRANES, BECOVERY, SENSITIVITY, TIME *FIDNEYS, 'LIVER INTERPALS ATCOSSING TISSUE CULTURE CELLS *CELLS BIOLOGY Sd01d180S40

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Thind Onder Nonlinear Optical Interaction and Polydiacelylene Studied by Picosecond and Subpressecond Degenerate Four Wave Mixing Confermational Transition in Poly 4 BCMU

Chopra, Pratibha Ghoshal. Prasad, Paras N Swiatkievica, Jacer PERSONAL AUTHORS: RAO D. N Sunite: K

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TR-86-0952

UNCLASSIFIED REPORT

of Chemical Physics, v84 in Jul PUB SUPPLEMENTARY NOTE

n12 p7049 7050, 15 Jun 86.

to play an important role because of their strong optical containing conjugated Pi electron structure are expected nonlinearity derived from Pi electrons and the nonlinear response time believed to be in lemtoseconds. We report here the study of third-order nonlinear optical interaction ix cube, in a polydincetylene, boly 4 BCMU forefront of research because of their importance in optical signal processing. Organic polymeric systems ABSTRACT: (U) Nonlinear optical effects are a the by degenerate four wave mixing offWM. OPTICAL PROCESSING, ORGANIC MATERIALS POLYMERS, ACETYLENES REPRINTS INTERACTIONS MIXING. NONLINEAR SYSTEMS, POLYMEPS, PEACTION TIME SIGNAL PROCESSING, WAVES <u>_</u> DESCRIPTORS

IDENTIFIERS: (U) Four Wave Mixing, 'Nonlinear Optics Acetylene/Poly-4-BCMU Polyd' Ac etylene Polydi Picosecond Time, Femtosecond Time

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DEPT OF CHEMISTRY COLUMBIA UNIV. NEW YORK.

Modification of Chemical Reactivity via Inclusion Compley Formation Photochemistry of Dibenzyl Ketones and Benzyl Phenylacetates.

Deoxycholic acid

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Fao Bantu N (Turno Nicholas J Ramamurths Daidhyanathan PERSONAL AUTHURS

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Pub in and of Organic Chemistry

<51 n1 p4FC 465 1986

SUPPLEMENTARY NOTE:

complexes as a medium for organic photochemical reactions we have insectigated the photochemical behavior of 19 as losts in the loted einter Results on benzyl charter barre is restricted in throe media and Photolysis in Diamin slooppound and exclosorating and whipe Misself in the schools reid the America of respension. at meal aption of the Commound and cooladestrin is surgested to be adjusted to the next on the in BCA and its producto to varior extents in Dianin's verse a compound. Products resulting from In the context of employing inclusion mode peutor acus diberzyl knimma and benzyl phenylyceinths using to composes of geminate radical pains pur ser aden Ciphin s of dibacky) ketoner SAGO Pffogt singest that the tri deprivations of the 1937 TO STATE OF THE STATE OF 0,010de-1717 is statution, ABSTRACT

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An Experimental Study of the Excited State Rotational Population of UH in Flames Using Easer Induced fluorescence

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Winefordner, J < Lanauze J Zizak G PERSONAL AUTHORS

F49620-84-C-0002 CONTRACT NO

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Pub in Combustion and Fisher 65 p203 SUPPLEMENTARY NOTE 214 1986

transfer and average quenching and thermalization degree have been measured for an exact analysis of the relative population of individual levels, knowledge of the state Rotationally resolved fluorescence spectra extracted population distributions have been ineated with Global parameters such as the natio of notational energy of GH in three different flames and for different excitation levels have been measured and analyzed. The a simple model based of a steady state rate approach to state pross sections for collisional Inansfer and numerical programs are needed Fevwords taser. Temperature (Flame) Hydrovyl Bidical, Diagnostics Reprints ABSTRACT

SSCRIPTORS OF FLAMES FLASER INDUCED FLUGRESCENCE HYDROXYL PADICALS THERMAL PROPERTIES ENFRGY TRANSFER, DUENCHING INHIBITION PARTICLE COLLISIONS REPRINTS DIAGNOSIS GENERAL DESCRIPTORS

RET Rotational Inergy Transfer \supset IDENTIFIERS FEB1102F

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Hutchingon Michael Serige Chomas F FERSONAL AUTHORS

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VANDERBILT UNIV NASPVILLE IN DEPT OF CHEMISTRY

Quantum Theoret cal Studies of Enzyme Inhibitors and Related Compounds. DESCRIPTIVE NOTE: Fin Litechnical rept 1 Oct 82:15 May

JUL 86

: Van Wazer, John R PERSONAL AUTHORS EWIG CART S

AFUSR 82 0100 CONTRACT NO

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Properties obtained include inclailed molecular structures techniques to enzyme inhibitors such as acetylcholinesterase. Computational techniques have been developed tasked and applied to 1: chemically related 4) similar molecular systems as tests of the methods intermediates, (3) the pralide now or 2 PAM aptidete, (U) This final technical report summarizes research on application of ab initio quantum chemical series of protetype and actual organophosphorus orpodors (2) protetype acetoloboline hydrolysis and thermodynamics of elementiny reaction steps

SCRIPTORS OU OUANTUM DEMISTRY FENZEME INHIBITORS MOLECHEAR STRUCTURE, THERMOGEMISTRY, TEST METHODS. ORBANIC PROSPHORUS COMPOUNDS HYDROLYSIS, CHOTINESTERASE INPLESTORS, ACCIPLOHOLINESTERASE, COMPUTATIONS PROTECTIVES, ACETYLCHOLINE, ANTIDOTES OF SCP IPTORS

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Oscillating blade nows, Unsteady Surface flow. compressor

CONTROL SYSTEMS

TSCRIPTERS U COMMPRESSOR PLADES, FOSCILLATION ROTATION INCOMPRESSIBLE FLOW, AERODYNAMIC CHARACTERISTICS, INLETS UNSTRADY FLOW DISTORTION PRESSURE DISTRIBUTION VARIABLE PRESSURE DYNAMIC

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RESPONSE COMPRESSOR ROTORS CASCADE STRUCTURES MEASUREMENT, TEST FACILITIES TEST METHODS

INSTRUMENTATION MODEL TESTS

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instrimented inclimad ecael compressor rotor to study the Lamp for a fingered with baseline data obtained from osorilating diades and to blade escribation in an undistanted tig. In accomplish this ministure pressure الملؤم فكالأط ولائ كلا لأفلالوموا ومور كمامين الامتعائم فيلاق فالملافق والماهية والمراج المراج St. orogen ment was conducted on a heavily raidiution in an Adeady State data Weng also iconined the dista sistem and the tonner des la lace de la sendante and enclara (lace desta laces) subjected to those conditions. Both physics of the espainment and performed cier is size injugations of flot coefficient and the coefficient is to 6 to 0 45 the coefficient in the coefficient in the coefficient coefficient in the coefficient coefficient for the coefficients. destarbasions germanifornized by one two pagesons i and instend, variationary marponse of the blade rox to a gringual within the thing distontion with some ar and be proceed the same model geometer The perpentage والمرابات والمرافق والمراجع وا The I down when were I am to DODINGUE OF THE CASE test rig and one branchare FOCUE FORCE

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20.14	CHESTNUT HILL MA DEPT OF PHYSICS
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AD A173 040	BOSTON COLL

The Dynamic Ionorphere Over Arecibo. A Theoretical Investrantion . =

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AF05R 81 0090 CONTRACT NO

PEPSONAL AUTHORS - CHARY DAVID J. Fortick JACTHAY M.

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YORK DEPT OF CHEMISTRY

7.4

(1) Photosensitization by Reversible Electron Transfer: Theories, Experimental Evidence, and Examples

DESCRIPTIVE NOTE: Rept. for 1984-1386.

PERSONAL AUTHORS: Kavarnos George J. Turro, Nicholas J

AF0SR 84-0040 CONTRACT NO

2303 PROJECT NO

83 TASK NO

. P 86 1028 A.F.O.S.R MONITOR

UNCLASSIFIED REPORT

Publin Chemical Reviews, v36 n2 p401 SUPPLEMENTARY NOTE 449 1986

fransier between evolted stafe and ground state malecules The discussion to minited to it mary electron transfer into owners in aloutron transies prodisses, termobjective Peyreloped by Photochemists is teaster ago sersar Merias to the foreign than a transfer to 15 years and to present the second of the second of of countries Should be in a consectable to tudy of proteston it ized Perfect terminates and received to AB\$19ACT OUT The subject of our review is electron Consider the present and seed and the The second second second of ethics, despired in an observe of to bernel i spetmen the ide No a standard for the agency of the service of the of the state of states the constant of the states of the s plant of the state age the

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RAIS/Reflection Absorption Infrared

Spectroscopy | PE61162F, WAFUSR2303A2

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PRINCETED LINE SEPT OF CHEMICAL LNSS HOSTING

Unital Isouth to thake Transformation of the Ni-100 costs square nort of 2.845 deg CO Surface

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PERSONAL AUTHURS BUNKINGER, Jay B. Schoof's Gregory R.

CONTRACT NO AFIGSR 82-0302

PROJECT NO. 2303

TASK NO A2

MONITUR AFOSR TR 36 1018 UNCLASSIFIED REPORT

SUPPLEMENTARY MOTE Pub in Survace Science vi i pL401-L408 1986

of 00 after heating to 280 K so that 2/3 of the molecules showing 2.3 of the molecules adsorbed in bridge sites and phase transformation wis followed dynamically with TPRAIS during temperature programming. The activation energy for the Ni crystal to 280 K results in little CO desorption and the same LEED pattern is observed. However, the infrared spectrum shows a reversal of the site occupancy Carbon monoxide adsorbed to a coverage of 0.6 monolayers addition the advantage CC transfers from on top sites to bridge sit slat 400 K before desorbing at 415 K. $rt.2) \times (sq.$ 1/3 of the molecules adsorbed in on top sites. Heating are in on top sites and 1/2 are in bridge sites. This reflection absorption infrared spectroscopy (TPRAIS). A thermally activated isosteric phase the phase transformation is approximately 64 kU-mol. rt 2 1845 deg LEED pattern and an infrared spectrum transformation of CO on Ni 100 was identified and followed dynamically with temperature programmed on Nº 100° at 190K gives mise to a ci5 sq.

DESCRIPTORS II INFRAGED SPECTROSCOPY PHASE TRANSFORMATIONS REFLECTION ABSCRPTION SPECTRA, CARBON MONOXIDE ADSCRIPTION NICKEL, VIBRATIONAL SPECTRA THERMAL EPOPERITES PEPRINTS

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STATE UNIV OF NEW YORK AT BUFFALO DEFF OF CHEMISTRY o, 20.6 AD 4173 037

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Michael Carlotte (Michael Carlotte) The section of the Stromanded to Edulate ŝ 1 1 1 1 1

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The Characterization of Platinum Electrodes by Infrared PRINCETUN UNIV NU DEPT OF CHEMICAL ENGINEERING

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Spectroscopy,

LAUTHORS Benziger day B. (Pascalifi A. (Bernasek Soriaga:M.P. (Hubard,A.T.) PERSONAL AUTHORS _. U)

N00014 82 K 0004, AFDSR-82-6302 CONTRACT NO

2303 PROJECT NO

TASK NO

AFOSR TR 86-1019 MONITOR

UNCLASSI TED REPORT

PPIEMENIARY NOTE Pub in Uni of Electroanalytical Chemistry vi98 p65-80-1986. SUPPLICMENTARY NOTE

Assistation Ptoblerman in basic solution provided ANCH C CONTINUES The results of a particular base (fed platings by drawing), is the first special than such presents and the such presents of the such presents of a few particular pa reflection adsorption infrared opentroscopy and Fangic Supplied theoreting of a 1 M BSCO4 solution assumbled Substitutional problems on the confider at potentials less is efficient transpordy. At post trais digitar, responsible that showing the surface of invalidately ground brooking the surface of surfaces. Another a conditional in I M HOT I with the Supplications of the cartage at potentions less than a fine at potentions less than the cartage at potentions less than the first first Ag Ag Agit, Absorbed hydrogenus restitute () and caused and proceeding the the control of Again Again (). or to P. Proctredm from 1 M NASH solutions inscending to tick mond with solid solution. However, anythe The surface of a Pt electrode has been tack your limited best incorporated with their are examined as a function of applicand potencial with in outside that a source nother province ABSTRACT (1. (3) F. 1 t.

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.) (*) 40 4173 033 STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

(U) Degenerate Four Wave Mixing Study of Conformational Transition of a Polydiacetylene, Foly-4 BCMU, in Solution

50

Cong. Perjun : Pang, Yang ; Prasad, Paras N. PERSONAL AUTHORS.

SUNY : AB : TR : 7 REPORT NO

F49620-85-C 0052 CONTRACT NO

2303 PROJECT NO

B3 TASK NO AFOSR MONITOR

TR-86-0948

UNCLASSIFIED REPORT

Pub in Unl of Chemical Physics, v85 n2 p1077-1086, 15 Jul 86 SUPPLEMENTARY NOTE

conditions, e.g. in chloroform/hexame solution when the molar fraction of CHCL3 varies from 0 to 1, or in toluche solution when the temperature changes from 40 to 700. The BCMU polydiacetylene was investigated by using nanosecond time-resolution degenerate four wave mixing. Polarization poly-4-BCMU, has been extensively studied because of its transition and fits a theoretical model of single chain from a thermal grating. The degenerate four wave miving signal changes dramatically during the rod to coil centered on polydiacetylenes because of their unique electronic and nonlinear optical properties. One of the (yellow) form. The conformational change in the poly-4 visible color change from red to yellow under certain conformational change from a rod (red) form to a coil butoxycarbonylmethylurethane) commonly abbreviated as data along with the rime response of the signal to be A great deal of interest is currently pronounced color change has been attributed to a polydiacetylenes, 5.7 dodecadiyn 1,12-bis +4conformational transition ABSTRACT (U)

AD-A173 033

DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A173 033 CONTINUED

DESCRIPTORS (U) POLYMERS FACETYLENES CHEMICAL REACTIONS MOLECULAR STRUCTURE BUTYL RADICALS, "ARBONYL COMPOUNDS, URETHANES, CHLOROFORM, COLORS, GRATINGS/SP.CTRA), HEXANES, MIXING, MIDELS, NONLINEAR SYSTEMS, OPTICAL PROPERTIES, POLARIZATION, REACTION TIME, RED.COLOR: SOLUTIONS/GENERAL), THEORY, THERMAL PROPERTIES, TOLUENES, VISIBLE SFECTRA, WAVES, YELLOW/COLOR:

IDENTIFIERS (U) Polyacetylenes, Urethane 4-Butoxy Carbonyl Methyl, PE61102F, WUAFOSR230:83

AD-A173 023 11/2

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF MATERIALS SCIENCE AND ENGINEERING

(U) Surface Chemistry in Relation to the Strength and Fracture of Silicate Glasses,

85 31P

PERSONAL AUTHORS: Pantano, C. G.

PROJECT NO. 2303

TASK NO. A3

MONITOR: AFOSR TR-86-0596

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Strength of Inorganic Glass and Fracture of Silicate Glasses, p37-66 1985.

The chemical characteristics of silica and iclean or lideal glass purfaces are used to describe secondary ion mass spectroscopy and electron spectroscopy surface species. Finally, an attempt is made to identify any direct and fundamental relationships between these multicomponent silicate glass surfaces are summarized with an emphasis on those features which are expected to conditions, and high temperature reactions under ambient specifically addressed. In addition, fundamental studies surface chemical characteristics and the micromechanisms analysis techniques such as ion-scattering spectroscopy the intrinsic structure and chemical reactivity of the and high temperature reactions or surface composition, and any in-depth modification or surface The surface are layer formation, are examined with modern surface The effects of hydration reactions under ambient treatments during manufacture and processing. influence strength behavior and fracture. ABSTRACT: (U) of fracture. conditions.

DESCRIPTORS (U) FRACTURE MECHANICS) SILICATES, GLASS, CHEMICAL PROPERTIES, SILICON GLASS, CHEMICAL PROPERTIES, SILICON DIOXIDL, HYDRATION, SURFACES MODIFICATION, 10NS, MASS SPECTROSCOPY, SURFACE CHEMISTRY, CHEMICAL REACTIONS, REACTIVITIES, ELECTRON SPECTROSCOPY, HIGH TEMPERATURE, STRENGTH MECHANICS), SCATTERING, SPECTROSCOPY SURFACE

DIIC REPORT PUBLIOGRAPHY SEARCH CONTROL NO EVNSAB

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AD-A173 023

AD A173 012 7/4

ANALYSIS, LAYERS, SURFACE FINISHING, MASS SPECTROSCOPY

OREGON UNIV EUGENE DEPT OF CHEMISTRY

IDENTIFIERS: (U) 'Silicate glass, Secondary Ion Mass Spectroscopy, PE61102F WUAF0SR2303A3

(U) Rotational and Vibrational Spectra of Molecular Clusters

DESCRIPTIVE NOTE: Final rept. 1 Nov 82-31 Mar 86

JUN 36 29P

PERSUNAL AUTHORS: Dyke, Thomas R.

CONTRACT NO. F49620-83-C-0007

PROJECT NO. 2303

TASK NO. B1

MONITOR: AFOSR

TR-86-0925

UNCLASSIFIED REPORT

predissociation broadening gas-OCS complexes on the au3 monomer mode region were field model for the axial modes of these molecules was constructed by combining infrared and Raman data. spectra of complexes in molecular beams using CARS. Raman spectra were obtained for molecular beams of HCN and DCN data. Methods were developed for observing vibrational constants, electric dipole moments, and nuclear hyperfine observed by this technique give accurate rotational molecular beam electric resonance method. High resolution manifested in the weak bonds holding cluster molecules effects of these molecules in atmospheric phenomena and purpose is to provide basic information for modelling the new techniques for gathering .his information The bonded complexes and van der Waals molecules and develops rotational and vibrational spectroscopy of hydrogen (0 004 cm) show no evidence of vibrational rotationally resolved and the Doppler limited linewidths obtained using tunable diode lasers. The spectra are polymers in the CN and CH stretching regions. A force interaction data which was used to provide structural radiofrequency and microwave spectra of complexes together. Rotational spectra were investigated the Infrared absorption spectra for molecular beams of rare to achieve insights concerning the intermolecular forces This research project studies the

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AD-A173 023

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PAGE 105 EVNS4B

DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN543

AD-A173 012 CONTINUED

DESCRIPTORS (U) MOLECULAR COMPLEXES, *HYDROGEN BONDS, *INFRARED SPECTROSCOPY, *RAMAN SFECTRA, MOLECULAR ROTATION, MOLECULAR NOLECULAR VIBRATION, MCLECULAR BEAMS, RESONANT FREQUENCY, HYPERFINE STRUCTURE, /BSORPITION SPECTRA, HYDROGEN SULFIDE, AMMONIA, CARBON DIOXIDE, MICROWAVE SPECTROSCOPY

IDENTIFIERS UP CARS/Coherent Antistakrs Raman Spectroscopy: van der walls Forces PE51102F. WUAFOSR230381

AD-A173 011 20/3 7/3

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

(U) Third Erder Nonlinear Optical Interactions in Thin Films of Poly-P-Phenylenebenzobisthiazole Polymer Investigated by Picosecond and Subpicosecond Degenerate Four Wave Mixing.

AY 86 4P

PERSONAL AUTHORS: Rao,D. N. ;Swiatkiewicz,Jacek ;Chopra, Pratibha Ghoshal,Suniti K. ;Prasad,Paras N. ;

REPORT NO. SUNY-AB/TR-4

CONTRACT NO F49620-85-C:0052, AFGSR-84-0281

PROJECT NO. 2303

TASK NO 83

MONITOR: AFOSR

TR-86-0951

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Applied Physics Letters, v48 n18 p1187-1189, 5 May 86.

in abbicoseconds. The value of X supersoriet 3 is found to be about an order of magnitu's larger than that of CS2 susceptibility has been measured by degenerate four wave has a very high mechanical cirength due to its rigid rod conjugated system has been experimentally verified to be polarization is explained by using the tensor properties of X subscripts (3) in an anisotropic medium phenylenebenzobisthiazole, commonly known as PBT, which response of the optical nonlinearity in the predectron measured anisotropy of X-subscript (3) as a function of conformation as well as environmental stability and a The measurement at two different wavelengths suggests the angular orientation at two different sets of Taser mixing in a 33-micrometer-thick biaxial film of a conjugated aromatic heterocyclic polymer, poly p The third order nonlinear optical that they are nonresonant X-subscript (3) values high laser damage threshold for the first time. ĵ

DESCRIPTORS: (U) - POLYMERIC FILMS, OPTICAL FROFERTICS

AD-A173 011

AD 7.173 012

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A173 011 CONTINUED

POLYPHENYLENE: THIAZOLES, MOLECULAR STRUCTURE, ELECTRONIC ST.TES, ANGLES, ANISOTROPY, AROMATIC COMPOUNDS, CONFORMITY, E.4VIRONMENTS, HETEROCYCLIC COMP(IUNDS, HIGH STRENGTH, LAS:R DAMAGE, LASERS, MIXING, NONLINEAR SYSTEMS, ORIENTATION/CIRECTION), POLARIZATION, POLYMERS, RIGIDITY, RODS, STABILITY, STRENGTH(MECHANICS), THIN FILMS, WAVES, REPRINTS

AD-A173 010 11/9

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

(U) Polysilanes as Photoinitiators for Vinyl Polymerization,

86 7P

PERSONAL AUTHORS: West, Robert ; Wolff, Andrew R. ; Peterson, Donald J. ;

CONTRACT NO. F49620-83-C-0044

2310

PROJECT NO.

TASK NO. A2

MONITOR: AFOSR

AFUSK TR-86-0964

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Radiation of Curing, v13 p35-40 Jan 86.

ABSTRACT: (U) The polysilane high polymers, more correctly called polydioganosilylenes, are made by condensing diorganodichlorosilanes with sodium metal. They are linear polymer in which all of the atoms in the polymer backbone are silicon atoms. Single dichlorosilanes produce homopolymers, and mixtures of two or more dichlorosilanes yield copolymers.

DESCRIPTORS: (U) *POLYSILANES, *POLYMERIZATION, *VINYL PLASTICS, ATOMS, COPOLYMERS, LINEAR SYSTEMS, METALS, POLYMERS, SILICON, SODIUM, PHOTOLYSIS. SOLUBILITY, ABSORPTION SPECTRA, OLEFIN POLYMERS

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DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN54B

AD-A173 007 AJ A173 009

FLOR' DA UNIV. GAINESVILLE. DEPT OF CHEMISTRY

(v.) Glow Discharge Source Atomization for the Laser. Excited Atomic Fluorescence Spectranetric Studies of Indium.

98

78 SOLIAL AUTHORS Patel B M. Winefordner J. D.

CONTRACT NO F49620-84-C 0002

PACJECT NO 2303

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UNCLASSIFIED REPORT

SUBPLEMENTARY NOTE Pub in Spectrochinica Acta v418 n5 0.169-474 1986 ABSTRACT: (i) A demountable glow discharge source has been used for the atomization of the analyte solutions beposited on graphite and copper rod cathodes. Indium inoms are spittered atomized from the nathode surface and are excited by a pulsed, frequency doubled dive laser by mped by the national laser. Atomic flucrescence is assurements are performed using the ray resonance flucrescence transitions. He detected as grains to adverse solutions. Ho use deposited as grains to addenous solutions. Ho use deposited as grains to and copper electrodes we indoors.

DESCRIPTORS UNGLOW DISCHARGES, PROBLOW, PLASER I JOUGED FIREPRICE, ALOMIZATION MORPHER, ELECTRODES, DIPOSITION MATER, SOLUTIONS/MIXIURES), WATER, GLAPHITE OF HODES SURFACES, RODS DYE LASERS, FREQUENCY MULTIPLIEPS LASER PUMPING, GLOW DISCHARGES, SOURCES, AT JMS NITRHORN LASERS, SPUTTERION, REPRINTS, REPRINTS

IDENTIFIEPS COMPESSION WUAFOSR2303A1

5-A173 007 7/3

SAN DIEGO STATE UNIV CA DEPT OF CHEMISTRY

U) Comparative Trapping Kinetics of SIL'LENE. 1. Silylene Reactions with 1,3-Butadiend and Ace:ylene and with and with 1,3-butadiene and Menthanol

36 96

PERSONAL AUTHORS: Rogers, D. S. ; O'Neal, H. E. ; Ring, M. A. ;

CONTRACT NO AFUSR-83-0209

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR TR-86-0997

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Organometallics, v5 n7 p1467 1473 1985

DESCRIPTORS: (U) ACETYLENE, (CARBINOLS, SILICON COMPOUNDS, BUTADIENES, ARRHENIUS EQUATION, CONSTANTS PARAMÉTERS, RATES, REACTANTS: CHEMISTRY!, SILANES, MEASUREMENT, REPRINTS

DENTIFIERS (U) +Silylenes, PE61102F, WUAFOSR2303B2

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B. Rate Constants for Collisional Deactivation of Br2 B:3: II Our by Br2 X: and He.

HELIUM MOLECULAR BEAMS, MOLECULAR VIBRATION, REPRINTS

PARTICLE COLLISIONS, PHOTODISSOCIATION, BROMINE

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AD-A173 006

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PERSONAL AUTHOPS VAN DE Bungtil. J., Heaven, M. C.

MONITOR: AFOSR

TR-86-0995

UNCLASSIFIED REPORT

SUBPLEMENTARY NOTE Pub in Chemical Physics, v103 p407-416 1986.

investigated in the gas phase. The molecules were excited to individual rovibrational levels by a pulsed dye laser. levels. The Stern-Volmer plots and resolved fluorescence efficient near resonant vibrational energy transfer (V-R involving collisional energy transfer to predissociated Electronic self-quenching of Br2 (B) was data have been analyzed using detailed kinetic model of occurring within a collisionally coupled set of rovibrational levels. The model provided rate constants entirely a consequence of energy transfer to predissociated levels. An upper limit of k sub 0 = 2×10 to the #12 power CC molecule's was determined. Keywords low J levels 1415) of v1.7, 11, and 14, and these were molecule s rotational energy transfer 6 + or - 2.X10to investigated Previous studies gave rate constants of approx $\times~0~\text{to}$ the -10 power CC molecule s but in the Negativity curved Stern-Volmer plots were obtained for energy transfer, and predissociation the power oc molecules s, and indirect evidence for present work it was found that the deactivation is for quenching (4.2 + or - 0.5)X10 to the power cc and the fluorescence decay monitored in real time Electronic quenching of Br2(8) by He was also interpreted in terms of a deactivation mechanism Lasing Kinetics the quenching. _ _ approx

DESCRIPTORS: (U) COLLISIONS, CONSTANTS.
COUPLING-INTERACTION), DEACTIVATION, DECAY DYE LASERS,
ENERGY TRANSFER GASES, KINETICS MODELS POWER PULSED
LASERS, RATES REAL TIME, RESONANCE, LASER INDUCED
FILINRESCENCE ELECTRONIS STATES, QUENCHING-INHIBITION.

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	40 CA
AD-A172 996 20.5	BERKELEY RESEARCH ASSOCIATES IN

1 May 85:30 Apr 85 (U) Neurophysiological Bases of Event-Related Potentials. 4 0 Annual rept. DESCRIPTIVE NOTE: 1 May 85 30 Apr 86 v S (U) Free Electron Laser Theory Final rept. DESCRIPTIVE NOTE:

AUG 86

66P

PERSONAL AUTHORS: Rebert, Charles S

CONTRACT NO. F46620-82-K-0016

PROJECT NO. 2313

C-0087

BRA-86-313R F49620-85

CONTRACT NO

REPORT NO

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PROJECT NO

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PERSONAL AUTHORS

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TASK NO. A4

MONITOR: AFGSR TR-86-0910

UNCLASSIFIED REPORT

be to determine if increasing highs striatal dopaminergic selectively destroys nigra-striatal dopaminargic neurons striatal dopamine for tash performance enhangement would Subsortion During SYTRACT: (U) In order to more fully understand the physiological and psychological significance of eventrelated brain potentials, contical and subcontical recordings were obtained from mankeys performing an manipulation indicated the contical role of the migrathe past year three cynomolgus monkeys were studied 2141 tollowing the administration or MPTP, a deug that Reaction fine operant conditioning task (cued reaction time) in the pars compacia of the substantia nigra Feywords activity would enhance performance and Cod: .:10n; electrophysiological responsibility Nuclei, Biocybernetics,

DESCRIPTORS IN INTEUROPHYSIOLOGY.

-ELFCTROFINCEPHALOGRAPHY ELECTROPHYSIOLOGY CFREUGAL
CORTEX CONDITIONED RESPONSE PHARMACOLOGICAL ANIXGONISTS
DOPAMINE, NUCLEI BRAIN COGNITION, CYBERNETICS JOBS
MONKEYS, OPTIMIZATION, PERFORMANCE (HUMAN), POTENTIAL
THEORY, REACTION TIME

IDENTIFIERS: (U) *Event Related Potentials, LPH SRU 4373 kJAFOSR213A4, PE61102F

UNCLASSIFIED REPORT

TR 85 0912

AF03P

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TASK NO MONITOP ABSTRACT office diectron laser (ECL) thoory is extended to explain several effects is sociated with high gate operation for trapped particle instability is received for short pulses fels, fel excillators, and fel applied for short pulses fels, fel excillators, and fel excillators, and in applicant a arbitrary electron distinbuller (nortion and an expense) is a profit of a profit of a profit of the form of the effect of a profit of a profit of the form of the effect of the effect of a profit of a profit of the profit of the effects of the ef

DESCRIPTORS J. FREE ELECTRON ASJANA LANKER AMPLIZIERS OSCILLATORS TRAPRIA NATHED PARATCLESA, STARLLITA, PHISED LAGERS, SHORT ASTA REAM CURMING LASEL BEAMS GAIN

EVN548 SEARCH CONTROL NO Dill Pirmai BIBLICAPA

the zeros of the Brownian motion velocity may be obtained

CONTINUED

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This program will later focus on measurements of

particles of known size suspended in liquids in order to

verify the theoretical understandin of the acquired signal followign the demonstration of the experimental approach, the technique will be applied to measurements

of submicron particles suspended in gas flows

system, to refine the data acquisition methods, and to

maximize the signal to noise of the optical measuring

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AERODYNE PESEARCH INC. PILLERICA MA

Study of Submigron Particle Size Distributions by Laser Doppler Measurement of Brownian Motion Annual technical rept 1 Sep 84-30 Sep DESCRIPTIVE NOTE

360 35 FEB Stanton, Alan C McGurdy, Keyth E PERSONAL AUTHORS Cheng, Wai F.

API - PR - 504 REPORT NO F49520 83 C-0154 CONTRACT NO

Submicron size, WUAFOSR2308A2, PE61102F

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IDENTIFIERS

SCRIPTORS (U) (BROWNIAN METION, +LIGHT SCATTEPING +LASER BEAMS (COMBUSTION, PARTICLE SIZE SOUT LASE?) VELOCIMETERS, DOPPLER EFFECT RAYLEIGH SCATTERING REFRACTIVE INDEX, MONTE CARLO METHOD, SIMULATION

DESCRIPTORS

2308 PROJECT NO

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TR-86 0873 AFOSS MONITOR

UNCLASSIFIED REPORT

for particle measurement in the submicron size range is o 1 midron diameter: Jet measurement of these particles is the time resolved 100 MHz) heterodyne signal obtained in conjunction with preliminary measurement of H20 particles the development and refinement of an optical system for conducting the experimental studies. This optical system few nonintrusive techniques are available objective of the present research is the development and application of a technique for measurement of individual laser Doppler velocimeter. Progress to date has included particles of Brownian motion, by statistical analysis of submicron particles in a gas stream. The approach is to an interferometer system resembling a more conventional measurement sideal has been developed innon theory, the Enobability diffillation for the time intervals between basic to an understanding of important processes in operation of the apparatus. A theory describing the which confirm the laser Doppler velocimeter mode of and experimental method are described in detail in measure the inertial relaxation time of individual such as soot formation and oxidation statistical benavior of the signal from such a combustion ABSTRACT

AD-A172 980

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SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIOGRAPHY

CALIFORNIA UNIV IRVINE COMBUSTION LAB

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AD-A172 973

Exhaust Pollutants and Plume Formation in Continuous Combustion Mechanisms of

Final rept. May 83 Jul 84 DESCRIPTIVE NOTE

SCRIPTORS (U) +COMBUSTORS +FUEL SPRAYS GAS TURBINES RAMJET ENGINES, JET ENGINE FUELS, FUEL NOZZLES, DROPS SIZES(DIMENSIONS) STABILIZATION, FLOW, MEASUREMENT,

interests in complex flows.

DESCRIPTORS

CONTINUED

AD-A172 973

JENTIFIERS: (U) *Swirl stabilized combustors. WUAFOSR2308A2, PE61102F

IDENTIFIERS LASER BEAMS

> PERSONAL AUTHORS 84 202

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Samue | sen G

UCI ARTR 84-18 REPORT NO

AF05R-84-0202 CONTRACT NO

2303 PROJECT NO

? TASK NO MONITOR

AFOSR TR 25 0883

UNCLASSIFIED REPORT

in to develop and verify the previous grant wis would lead over the five year distinon of the grant to in situ measurements of drop size and drop velocity as and as gas velocity within the DSC and to the study of ' iboratory methodology cuitable for the adquistion of the desired 2 To coensin the OSC with a liquid, finial posts, and is for conduct the Dillute rapibility to conduct in situ worsurewents of droplet witing capability that * DOR bing atomized liquid 79 SS86. a premixed POST PROBLEMENT selles se parto desends non in oting and meacting availar as well as a rabonatory rembuston the Opposed Well Combuston was ISTRACT U The goal of the present grant was to develop laboratory model combustors and experimental turbulent transport in swirl-stabilized auguid fuel med in both a opray atomized reacting flows in purticular, the was develored and tester water from the 10/37/01 nton eyerem In ade, ton deseloped and a data base was estable model swimt stabilized Laboratory nabeling graphus-fired conditions Preceded to preseting the DSC on s In a previous grant data basa sa Lestablished for non to establishing a droplet objectives of the program were: STO WENT THAT I'MIN NOZZE and the standard in Suppor Saint Combactor (DSC negrodyn an information: pear piron 5 (of.)

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DITE REPORT BIBLIDGRAPHY SEARCH CONTROL NO EVN548

AD A172 96" 9 4 12 1

ARIZONA UNIV TUCSON OPTICAL SCIENCES CENTER

(U) Optical Processing in Radon Space

DESCRIPTIVE NOTE Final rept Jul 84 Jan 86.

SPECTRUM ANALYSIS IMAGE PROCESSING, MATHEMATICAL FILTERS. TWO DIMENSIONAL THREE DIMENSIONAL FOURIER TRANSFORMATION. SURFACE ACOUSTIC WAVE DEVICES. REGRESSION

Wigner distribution functions. Hartley transformation. Yule Walker model. WUAFOSR2305B1. PE61102F

*Radon transformation, Radon space

IDENTIFIERS

ANALYSIS

+OPTICAL PROCESSING, +SIGNAL PROCESSING

processing 3D data in Radon space concentrated primarily

CONTINUED

AD: A172 967

on analysis of prospective materials for wavelength

multiplexed mass-data storage

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DESCRIPTORS:

JUN 86 113P

PERSONAL AUTHORS Barrett, Harrison H

CONTRACT NO AFOSR-84-0188

PROJECT NO 2305

TASK NO. 81

MONITOR: AFOSR TR 86-0916 UNCLASSIFIED REPORT

MBSTRACT: (U) The stated goals of the program were: Theoretical investigation of the role of the Radon transform in signal processing, including enumeration of the operations achievable in Radon space Construction of a practical system for 2D spectral analysis and image filtering. Proof of principle experiments for other

a practical system for 20 spectral analysis and image filtering. Proof of principle experiments for other processing operations, such as bandwidth compression and calculation of the Wigner distribution function; and Determination of the feasibility of Radon-space.

processing 3D data, emphasizing not only system architecture but also storage media capable of saving and rapidly retrieving the requisite data arrays. Several 2D signal-processing operations susceptible to solution in radon space. These include the Hartley transform, certain joint coordinate-frequency representations (e.g., the Wigner distribution function and Woodward ambiguity

Wigner distribution function and Woodward ambiguity function: certain algorithms for spectrum estimation (e.g. the periodogram and the Yule Walker autoregressive model) and the cepstrum Most of these Radon space operations have been demonstrated in computer simulations and some have been performed by means of analog hardware

operations have been demonstrated in computer simulations and some have been demonstrated in computer simulations and some have been performed by means of analog hardware in the hybrid Radon space signal processing system. This system can perform a family of processing operations at about five frames per second. Timited by the image rotation rate. Processing is performed by surface accustic wave (SAW) filters, and the 2D processed signal is displayed on a CRT. Studies of the feasibility of

AD A172 957

AD A172 967

PAGE 114 EVNS4B

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SEARCH CONTROL NO EVNS48 CTIC REPORT BIBLIOGRAPHY

AD A172 956 DESCRIPTORS TEXAS A AND M UNIV COLLEGE STATION IN MECHANICS AND 13 MATERIALS CENTER AD A172 965

SCRIPTORS (U) (STRUCTURAL RESPONSE) (THERMOMECHANIUS), SPACE SYSTEMS, STRUCTURES (U) A Model for Predicting Thermomechanical Response of

CONTINUED

Large space structures, WUAFOSR2303KI

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IDENTIFIERS

PE61102F

Final technical rept som 33 May 86 DESCRIPTIVE NOTE

Lange Space Structures

286F s C JU,

3 13151EH I Allen D PERSONAL AUTHORS

WW 4875 86 REPORT NO

119620 83-0-0067 CONTRACT NO

PROJECT NO

TASK NO

767<u>5</u>6 18 36 0894 MONITOR

UNCLASSIFIED REPORT

A fractographic Study of Damage Mechanisms in Mumerical Salution of a Time Dapardent Thermoviscoplastic TO ESTIGATION SAFET Plastic analysis by the Finite Franci Action Predicted Structural Parpones Algorithms Mose' Results for Large Space Structures fublications by totalogerdy Interim lectronical Reports it Prediction of West Cinemation in a Oue to Increseptionical Coupling, Brassycked Temperature Field on a Thomposphanically Morrottin opinitie Space Contents Research Completed Summany of Anym with a partial stary dependent and Spatially Variable Modumath ditempating to Subingress station on Elastics Prestationa Dynamia Preparer of a gamposite Problem in Machinis A Finite Element Model for the Completed Pacarich Literalune Survey, Selection of Constitution Equations - Coupled Energy Balance Law Annivited and Toucs Steephare Effect of Degraphore tour a Mateerial THE EFFICIENT AND Properties on the Oynamic Responsible warge Spice Thermoniarise Shalveis of Lange Composite Shada Shart Fibor Motal Mitrix Compositors Thermos Lecto Victor Universal Ban Arial Tamperature Gradient in A Structures

SEARCH CONTROL NO EVNEAB LEST PRELITY HANGER

CONTINUED

DESCRIPTORS

AD A!72 945

CONTRACTEM CONTARIO INSTITUTE ACROSPACE TORONTO UNI. STUDIES

SCRIPTORS OF TASER PUMBING, FOUNDITER PROGRAMS, FOLASMAS-PHYSICS, SUDIUM, ELECTRON DENSITY, TEMPERATURE SATURATION FREE ELECTRONS THREE DIMENSIONAL

SATURATION FREE ELECTRONS THREE DIMENSIONAL EXPERIMENTAL DATA, FHOTONS STRONTIUM

LIBORS-Laser Introductor program, LIBORS-Laser Intration Based on Resonance Saturation), PEG1102F. WIREDSROAMIA.

WUAF DSR2301AB

IDENTIFIERS

Generation of Short WaveLength Padiation Flom Plasmas The Application of Lasen Saturation to the Efficient

Final mapt | 1 Nov 84 31 Oct 85 DESCRIPTIVE NOTE

s, ¥ V X Measures, R. PERSONAL AUTHORS

AF05R 85-0020 CONTRACT NO

2301 PROUSET NO

MONITOR

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TASK NO

TR 35.0906 AFOSB

UNC! ASSITIED REPORT

We have been able to show by companison with experiment that this LIBORS computer code can predict the radial and shown that both one and two photon resonant laser pumping Lastly we have demonstrated parametric generation within detailed measurements of a sodium plasma created by laser this same strontium plasma when the laser is tuned close on resonance saturation (LIR(RS) and permits us to map the three dimensional nature of this complex interaction attenuation in the formation of the plasma. We have also play the central role in this process. We have developed resonance saturation and reveal the importance of laser heating of the free electrons by superelastic collision a computer code that models this laser ionization based coupling laser energy into a gas or plasma. In the case axial electron density and temperature profiles of the experimental results in themselves represent the first These quenching of the taser pumped state has been shown to excitation of high lying states of the strontium ion. Resonant laser pumping of transitions of laser saturation of a resonance transition rabid within atoms or ions represents a powerful mode of of a cold, uneverted plasma created by two photon plasma formed along the path of the laser pulse ionization of strontium vapor can lead to rapid te a two photon transition of the ion AD A172 945

EVN548 116

AD A172 945

SEARCH CONTROL NO EVNS4B DIIC REPORT BIBLIOGRAFHY

20 12 AD A172 944

MATERIALS RESEARCH SOCIETY UNIVERSITY FARF PA

Laser-Controlled Chemical Processing of Surfaces Symposium Held on November 1983 in Boston N S A Massachusetts. _ _

Final rept | 1 Nov 83 31 Jul 84 DESCRIPTIVE NOTE

423P

Ehrlich Daniel 3 Johnson A Schlossberg Howard R PERSONAL AUTHORS

AFDSR-84 0046 CONTEACT NO

2301 PROJECT NO

Ā TASK NO

TR 85 1064 AFOSR

MONITOR

UNCLASSIFIED REPORT

Proceedings of the Materials Research Volume 29 Society Symposia SUPPLEMENTARY NOTE

MA, the Materials Research society spensored a symposium volume is crashized according to the main topic areas of This includes reactions, variously termed LCVD and laser driven thermally by which is ribidly expanding to include a diverse variety of methods of activating on confining reaction for film primarily photochemical or non thermal photo deposition in the third section. The fourth section covers dry etching processes only. A fifth section includes papers from the etchind sphilostions of laser methods for Cinctrochemistry driven by lasers is covered as part of its annual meeting in Boston. etching, or doping of solid surfaces. The On the dates of the 14th to the16th of chemistry induced with laser radiation. This a field chemical visor deposition reactions, driven thermally hyrolysis or by dominantly thermal surface treatment product the evoluting field of materials processing by the symposium. The first section is devoted to laser Symposium who the Second Annual 485 event organized Controlled Chemical Processing of Sunfaces pyrolytic. A second section is structured around November 1933 = deposition 14 July 1 ABSTRACT 19861

CONTINUED AD A172 944

A final section sixth section, we include processes that are not easily analysis of deposition and etching processes. In the classified within the preceding sections. covers papers that are mainly analytic.

SCRIPTOPS (U) SURFACE FINISHING CHEMICAL ENGINEERING (LASER APPLICATIONS FILMS VAPOR DEPOSITION) ETCHING DOPING SOLIDS PYROLYSIS PHOTOCHEMICAL REACTIONS, ELECTROCHEMISTRY, METHODOLOGY DESCRIPTORS

PEG1102F, WUNFOSR2301A1 ĵ. IDENTIFIERS

SEARCH CONTROL NO EVN548 YERRED BIRTHOSEART . . .

AD-A172 937

TURTS UNIV MEDICED MA DEPT OF PHYSICS AND ASTROMOMY

SCRIPTORS (U) OWARF STARS, STELLAR ATMOSPHERES, COMERENT ELECTROMAGNETIC RADIATION, FLARES, MICROWAVES, CORONAS, EXTRATERRESTRIAL RADIATION, NARROWBAND

CONTINUED

AD A172 937 DESCRIPTORS ULTRAHIGH FREQUENCY, REPRINTS

DECIMETRIES: (U) Stellar eruptions, Stellar flares Decimetric waves, PE61102F, WUAFOSR2311A1

IDENTIFIERS: (U)

Narrow Band - Slowly Varying Decimetric Radiation from the Dwarf M Flare Star YZ Canis Minoris HI Narrow Rand

a a

Willson Robert F Lang Kenneth R PERSONAL AUTHORS

AF0SR 33-0019 CONTRACT NO

2311 PROJECT NO

< TASK NO AFOSR MONITOR

TR 85 0985

UNCLASSIFIED REPORT

in Astrophysical Jnl., v302 n1 Pub pt2 pL17-L21 1 Mar 86 SUPPLEMENTARY NOTE

power.cc but a longitudinal magnetic field strength of H sub L << 250 G. The slow variation of the narrow-band at this distance. The narrow-band structure (Delta nu/nu radiation at the second harmonic of the plasma frequency similarly requires N sub e : approx. 6 x 10 to the ninth to gyroresonant radiation from coronal loops; the loops would have to be more than 200 times the stellar radius in size with magnetic field strengths of H > or = 100 G plasma radiation. Maser action at the second harmonic of the gyrofrequency implies a longitudinal magnetic field quiescent, or nonflaring, emission cannot be attributed emission might be explained by the stochastic nature of There are and an electron density of N sub e = mechanisms like electron-cyclotron masers or coherent Coherent plasma continued low-level coherent burst activity. There are possible analogies with narrow band decimetric bursts > or > 0 t) of the slowly varying radiation cannot be $\mathsf{ISTRACT}^+ = \mathsf{IU}^+ - \mathsf{Narrow-band}$ slowly varying microwave radiation has been detected from the dwarf M star YZ This observations may be explained by coherent Jurst 000 Canis Minoris at frequencies near 1465 MHz. explained by continuum emission processes strength of 250 G and an electron densapprox. 6 \times 10 to the ninth power.cc. observed on the Sun ABSTRACT

AD-A172 937

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SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIOGRAPHY

AD-A172 935 7.3 AD-A172 936

(U) Polymerization of 1-Bromo-2-Phenylacetylene

ARIZONA UNIV TUCSON CARL S MARVEL LABS OF CHEMISTRY

Trumbo, D. L. ; Marvel, C PERSONAL AUTHORS

AF0SR-82-0007 CONTRACT NO

2304 PROJECT NO

MONITOR

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TASK NO

TP 85 1022 AFOSE

UNCLASSIFIED REPORT

Pub in Unl of Polymer Science: Part A Polymer Chemistry, v24 p759-766 1936 SUPPLEMENTARY NOTE:

and GPC The polymers were found to be low molecular was noted between these polymers and those synthesized by thermal initiation and the polymers were analyzed by IR, polymerization progressed. In addition, initiation with polymerization, percent conversion, or molecular weight AIBN was attempted, however, no difference in rate of thermal initiation. Also, no initiator fragments were The title monomer was polymerized by weight species that had eliminated bromine as the found in the polymers ABSTRACT: 11.

ESCRIPTORS FULL POLYMERIZATION FACETYLENE, PHENYL RADICALS FROMINE, POLYMERS, INFRAPCO SPECTROSCOPY, NUCLEAR MAGHETIC RESONANCE, GAS CHROMATOGRAPHY, MOLECULAR WEIGHT, REPRINTS DESCRIPTORS

PEB1102F, WUAFUSR2304AB 7 IDENTIFIERS

14/5 7/4

PITTSBURGH UNIV PA SURFACE SCIENCE CENTER

An Enhanced Electron-Stimulated-Desorption Ion Angular Distribution Method for Imaging Molecular Orientations of Adsorbed Species,

9

Dresser, M. J. ; Alvey, M. D. ; Yates, J. T. PERSONAL AUTHORS: ب ج

AF05R - 82 - 013 CONTRACT NO.

2301 PROJECT NO

A7 TASK NO AFOSR MONITOR

TR-86-1023

UNCLASSIFIED REPORT

Pub, in Unl. of Vactum Science and Technology A, v4 n3 p1446-1450 May/Jun 86. SUPPLEMENTARY NOTE.

details in high and low signal regions than has been seer impact on the metal surface, and is therefore present in all photographic ESDIAD measurements made to date. The process leads to intense and sharp 0 = ESDIAD beams. The distribution (ESDIAD). The improved method has been used normal by + 19 in directions perpendicular to the ridges for CD coverages above 0.75 %/Ni. Evidence for the C·O Niction which are induced by intermolecular interactions improved ESDIAD method involves the removal of a soft $\times^$ tilting has also been studied as a function of electron independent of electron energy and current density. The CO molecules adsorbed with normal C.O. bond orientations on ridge Ni sites tilt away from the This has demonstrated that an Olisi expitation A striking improvement has been made in quality of positive ion angular distribution data obtained in electron-stimulated desorption ion angular resultant pure ESDIAD patterns show more quantitative to study configurational changes in chemisorbed CO on ray background signal which originates from electron angular distribution of the background effect is at high coverage. ABSTRACT: (U) energy.

DITC REPURT BIBITOGRAPHY SEARCH CONTROL NO EVNS48

AD-A172 935 CONTINUED

DESCRIPTORS U SURFACE CHEMISTRY, 'MOLECULAR PROPERTIES, 'ADSORPTION, 'PHOTOGRAPHY ELECTRONS, STIMULATION'GENERAL', CATIONS, DISTRIBUTION CHEMISORPTION, CARBON MONOXIDE, CRIENTATION'DIRECTION MOLECULE MOLECULE INTERACTIONS, NICKEL, REPRINTS

IDENTIFIERS: (U) ESDIAD/Electron Stimulation Desorption Ion Angular Distribution), PE61102F, WUAFOSR2301A7

AD-A172 934 21/2

CALIFORNIA UNIV BERKELEY DEPT OF MECHANICAL ENGINEERING

 U) Application of Rayleigh Scattering to Turbulent Flow with Heat Transfer and Combustion.

DESCRIPTIVE NOTE: Final rept. 1 May 85-30 Apr 86,

JUN 86 10P

PERSONAL AUTHORS: Talbot, L.

CONTRACT NO AFOSR-84-0124

PROJECT NO. 2308

TASK NO. A2

MONITOR: AFOSR TR-86-0881

UNCLASSIFIED REPORT

density covariances, and mean density profiles were found The probability density function for the location of the flame brush was measured and found to have a self-similar new optical technique was developed to make time-resolved to be in good agreement with a wrinkled laminar flame model which is an extension of the Bray-Moss-Libby model. behavior when scaled with the maximum slope thickness. A Some of the findings are that incident laser beam, thus extending the two-point technique to a turbulence controls flame motion in the frequency range 100-100 Hz, and that an increase in heat release for a two-point flames have been carried out using two-point Rayleigh multipoint one. The technique has been applied to the amplitude of the flame fluctuations without modifying Studies of premixed turbulent v-shaped Rayleigh scattering measurements along a length of a investigation of the dynamics of v-shaped premixed turbulent flames. Some of the findings are that inc given incident turbulence intensity increases the scattering. Density fluctuation intensities, their spectral characteristics ABSTRACT:

DESCRIPTORS: (U) 'FLAMES, 'TURBULENCE, SHEETS, RAYLEIGH SCATTERING, LASER BEAMS, MIXING, DENSITY, COVARIANCE, PROBABILITY DENSITY FUNCTIONS

IDENTIFIERS (U) Premixed turbulent flame structure, Iwo

AD-A172 934

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A172 934 CONTINUED

point Rayleigh scattering, Laminar flame model. Turbulent flame brush. PEB1102F. WUAFOSR2303A2

IOWA STATE UNIV AMES

20/12

AD-A172 923

(U) Synthesis and Characterization of Thin Films.

DESCRIPTIVE NOTE: Annual rept. 1 Sep 84-30 Nov 85,

JUL 86 26P

PERSONAL AUTHORS: Lakin, K. M.

CONTRACT NO. AFOSR-84-0388

PROJECT NO. 2306

TASK NO. B2

MONITOR: AFOSR TR-86-0859

UNCLASSIFIED REPURT

ABSTRACT: (U) During this one year period the installation of a single source ionized cluster team (ICB) deposition system was completed, a three source ICB system was designed and purchased, the LiNbo3 thin film and ellipsometry projects neared completion

DESCRIPTORS: (U) *THIN FILMS *LITHIUM NIOBATES, *VACUUM DEPOSITION, SPUTTERING, ION BEAMS, CLUSTERING, ULTRAHIGH VACUUM, ELLIPSOMETERS, MONITORING

IDENTIFIERS: (U) ICB/Ionized Cluster Beams// WUAFDSR2306B2, PE61102F

AD A172 934

SEARCH CONTROL NO. EVN548 DTIC PEPORT BIRLINGRAPHY

MASSACHUSETTS INST OF TECH CAMBRIDGE TECHNOLOGY LAB FOR

<u>س</u>

AD-A172 922

Dynamics and Aeroelasticity of Composite Structures ADVANCED COMPOSITES

Final rept. 1 May 84-30 Jun 85 DESCRIPTIVE NOTE

MAR 85

Dugundji, John , Chen, Gun-Shing PERSONAL AUTHORS

TELAC-85-25 REPORT NO.

AF0SR-84-0:42 CONTRACT NO

2302 PROJECT NO

8 TASK NO.

TR-86-0892 AFOSR MONITOR

UNCLASSIFIED REPORT

divergence behavior of graphite/epoxy forward swept wings with rigid body pitch and plunge freedoms present. A complete, two-sided 30-degree forward swept wing aircraft model was constructed and mounted with low friction freedom flutter, bending torsion flutter, and a support dynamic instability which could be eliminated by proper adjustment of the support stiffness. Good agreement with bearing in a low speed wind tunnel. Four different ply linear theory was found for the observed instabilities investigation was made of the aeroelastic flutter and Y nd tunnel tests on the free flying models revealed body layup wings could be interchanged on the model. An analytical and experimental ĵ

GRAPHITED MATERIALS, AEROELASTICITY, FLUTTER, MODEL TESTS SWEPTFORWARD WINGS, EPOXY COMPOSITES DESCRIPTORS

Divergance, WUAFOSR2302B1, PE61102F _ _ IDENTIFIERS

21/2 AD-A172 904

Basic Instability Mechanisms in Chemically Reacting MASSACHUSETTS INST OF TECH CAMBRIDGE Subsonic and Supersonic Flows.

Annual rept. 30 Sep 84-29 Sep 85 DESCRIPTIVE NOTE:

28P OCT 85 Toong, Tau-Yi; PERSONAL AUTHORS:

AF0SR-83-0373 CONTRACT NO.

2308 PROJECT NO.

A2 TASK NO.

TR-86-0887 AFOSR MONITOR

UNCLASSIFIED REPORT

effects of adding ethane (at the same overall equivalence The theoretical study showed the importance of wrinklingthe gradient model in that part of the shear layer nearer Both theoretical and experimental studies mechanisms governing turbulence-combustion interactions. Temperature fluctuations were augmented by ethane addition, the highest augmentation being observed at 10 the unreacted region. The experimental study showed the direct rate-augmentation effects due to reaction led to fluctuations, resulting in turbulent energy and mass transport in a direction opposite to that suggested by concentration, and vorticity in a shear layer. The wrinkling-like effects were induced by the transverseratio) on the thermal structure of methane/air flames. like effects as well as the effects of the chemical reaction rate on the evolution of fluctuations in velocity fluctuations in nonuniform mean flows. The changes in phase relationships between the various streamwise- and transverse-velocity, temperature. were conducted to determine and elucidate major A one-component Laser-Doppler /elocimetry system was installed and tested ethane addition.

PROPAGATION, SUBSONIC FLOW, SUPERSONIC TLGW COMBUSTION STABLLT: INTERACTIONS RECOTION FINITYING CHEMICAL *COMBUSTION *TURBULENCE FLAME DESCRIPTORS

40 CLIA 90

DIIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN548

AD-A172 904 CONTINUED

REACTIONS. SHEAR PROPERTIES, TEMPERATURE, CONCENTRATION CHEMISTRY), VORTICES, MASS TRANSFER, ETHANES, FLAMES, VELOCIMETERS

AD-A172 903 20/4

TORONTO UNIV DOWNSVIEW (ONTARIO) INST FOR AEROSPACE STUDIES

 U) Random-Choice-Method Solutions for Two-Dimensional Planar and Axisymmetric Steady Supersonic Flows.

DESCRIPT, VE NOTE: Interim rept.

JAN 86 102P

PERSONAL AUTHORS: Shilz. C. ;Gottlieb, J. J.

REPORT NO. UTIAS-297

CONTRACT NO. AFOSR-82-0096

PROJECT NO. 2307

TASK NO. A1

MONITOR: AFOSR TR-86~0902

UNCLASSIFIED REPORT

riemann problem, which is the elemental solution of the hyperbolic equations of two dimensional steady supersonic flows. The Riemann problem consists of two waves limitations of the RCM. Numerical results are shown to be A handom choice method (RCM) is developed in excellent agreement with both known analytical solutions and results from the method of characteristics. presented for different types of planar and axisymmetric flows, to demonstrate the applicability, capability, and an oblique shock wave or a Prandtl Meyer expansion wave. and each wave can be either steady supersonic flows, such as those for sharp edged planar airfoils, supersonic inlets of aircraft engines, for obtaining fairly practical and efficient numerical solutions for two dimensional planar and axisymmetric Advanced techniques are given for solving the Riemann problem iteratively, handling the boundary conditions along body and free jet surfaces, and computing only free jets. This method is based on the solution of interesting and practical numerical solutions are pointed bodies of revolution, supersonic nozzles, certain parts of flow fields of interest. Many separated by a slip stream. ĵ ABSTRACT

DITC PEPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN54B

AD-A172 903 CONTYNUED

DESCRIPTORS: OU SUPERSONIC INLETS STEADY FLOW, SUPERSONIC FLOW, NUMERICAL ANALYSIS BOUNDARY VALUE PROBLEMS, TWO DIMENSIONAL, AXIALLY SYMMETRIC FLOW, DATA REDUCTION, GRAPHS, CANADA

IDENTIFIERS. .U. Random choice method, free jet flow, Riemann problem Prandtl Meyer flow

AD-A172 899 1271

CALIFORNIA UNIV SAN DIEGO LA JOLLA INST FOR PURE AND APPLIED PHYSICAL SCIENCES

(U) The Analytic Structures of Dynamical Systems.

DESCRIPTIVE NOTE: Final rept. 1 Oct 85-31 Mar 86,

56 ±3

PERSONAL AUTHORS: Weiss, John ;

CONTRACT NO. AFOSR-84-0128

PROJECT NO. 2304

TASK NO. A4

MONITOR: AFOSR TR-86-0915

UNCLASSIFIED REPORT

ABSTRACT (U) A baclund transformation and linearization for an instance of the henon heiles system is examined. This provides a special form of solution depending on the three parameters. In addition, a direct formulation in terms of the schwarzian derivative is defined for the henon heiles system and second Painleve transcendent. This provides (1) a classification of the Henon Heiles system as equations of Novikov type and: (2) a simple method for deriving the Backlund transformations and special solutions of the second Painleve transcendent. As equations of Novikov type the integrable occurrences of the Henon Heiles system can be completely integrated by known methods.

DESCRIPTORS: (U) +TRANSFORMATIONS:MATHEMATICS:, SOLUTIONS:GENERAL: PARTIAL DIFFERENTIAL EQUATIONS RICCATI FOUATION IDENTIFIERS. (U) Backlund transformation, Henon Heiles system, Painleve transcendent, Lax pairs, Miura transformations, PEG1102F, WUAFOSR2304A4

SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIUGRAPHY

AD-A172 895 13 13 14/2 AD-A172 896

M UNIV COLLEGE STATION DEPT OF AEROSPACE TEXAS A AND ENGINEERING Development of Constitutive Equations in Nonlinear Aerospace Materials and Structures

Jun 84-Apr 85 Final rept. DESCRIPTIVE NOTE:

Allen, David H PERSONAL AUTHORS

AF0SR - 84-0257 CONTRACT NO

03 2 PROJECT NO

AFOSR MONI TOR

60

TASK NO

TR 86-9857

UNCLASSIFIED REPORT

material properties of the structural materials mentioned uniaxial testing machine. In general, the system is used The instrumentation purchased under this contract is a Materials Testing System (MTS) Model 880 materials under prescribed thermal conditions. Typical structures and advanced military aircraft. The primary and nickel-based objective of the equipment is to provide experimental to perform mechanical tests on aerospace structural data necessary to characterize the tharmomechanical aerospace materials being tested include polymeric These materials are utilized both in space composites, metal-matrix composites metals

STRUCTURAL MEMBERS, EXPERIMENTAL DESIGN, VISCOELASTICITY COMPOSITE MATERIALS, AEROSPACE SYSTEMS, NICKEL ALLOYS, TEST EQUIPMENT THERMOMECHANICS, RESEARCH MANAGEMENT DESCRIPTORS

Metal matrix materials, PE61102F WUAF0SR230281 IDENTIFIERS

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8/5

20/6

STANFORD UNIV

(U) Optical Computing Research

18 May 85-30 Jun 86 Final rept. DESCRIPTIVE NOTE:

836 JUN 86

Goodman, Joseph W. PERSONAL AUTHORS:

AF0SR-83-0166 CONTRACT NO.

2305 PROJECT NO

89

TASK NO

MONITOR

TR-86-0911 AFOSR

UNCLASSIFIED REPORT

Computation using neural networks; and 440ptimal imaging concentrators Various administrative matters pertinent Scientific Research Grant No. 83-0166, Work has been in progress in four different areas: (1)Optical 1985, on Air Force Office of interconnections; (2)Real-time defect enhancement in periodic structures using four-wave mixing; (3) This report summarizes the work to the grant are also discussed accomplished since May 18, ABSTRACT

DESCRIPTORS: (U) +OPTICS, (COMPUTERS)
BEAMS(ELECTROMAGNETIC), HOLOGRAPHY, SIGNAL PROCESSING,
DIFFRACTION ANALYSIS, DEFECTS(MATERIALS), OPTIMIZATION

DENTIFIERS: (U) Interconnections/optics), Optical computing, Mixing/Four Wavel, Clutter(Administrative). Nural networks, Efficiency/Diffraction), Concentrators/Imaging), Periodic structures IDENTIFIERS

AL-A172 895

AD A172 896

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SEARCH CON ROL NO EVN548 DITC REPORT BIBLIOGRAPHY

ry r AD-A172 894

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DESCRIPTORS.

SCRIPTORS (U) 'REACTION KINETICS (BARIUM COMPOUNDS. 10DIDES, *MOLECULAR ROTATION, *LASER INDUCED FLUORES(ENCE, HYDROGEN, KINEMATICS, IMPACT, PARAMETERS, PROBAPILITY, COLLISIONS, VELOCITY, OPACITY, MOLECULAR

PEG1102F, WUAFUSR2303B1

IDENTIFIERS: (U)

VIBRATICN MOLECULAR STATES, REPRINTS

CA DEPT OF CHEMISTRY STANFORD UNIV (U) Information on the Impact Parameter Depandence of the BAI Yields Bil V-8:+H Reaction.

12P

Noda Chifuru : McKillop John S. ; Johnson , Waldeck Janet R. ; Zare, Richard N PERSONAL AUTHORS Mark A

F49620 - 85-C - 0021 NSF : CHE85 - 05926 CONTRACT NO.

2303 S PROJECT

8 LASK NO AFOSR MONITOR

TR-85-1026

UNCLASSIFIED REPORT

of Chemical Physics, v85 Pub, in Jn1 n2 p856-864, 15 Jul 86. SUPPLEMENTARY NOTE

expendicity and the height of any energy barrier prevents a conclusive determination of the specific opacity opacity functions are estimated based on different models probability as a function of the impact parameter for this channel, called the specific opacity function, once the reaction probability as a function of velocity has specific opacity function peaks strongly near 2.6 A with function for this reartion. Instead, various approximate velocity dependence would significantly affect the shape been determined. Unfortunately, lack of knowledge of the studied. If the reaction probability is the same for all Using selectively detected laser-induced Bal product has been measured for the beam-gas reaction the rotational state distribution of the a full width at half-maximum of 10 A. However, the relative collision velocities, then the BaI(v = 8) of the velocity dependence of the reaction channel Ba + HI yield Bal (V = 8) + H. Owing to the highly possible presence of a small energy barrier in the collision velocity distribution, and this type of entrance channel causes a cutoff in the relative measurements can be used to derive the reaction constrained kinematics for this system, these of the specific obacity function ABSTRACT: .U: fluorescence,

AD A172 894

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SEARCH CONTROL NO. EVN548 DITC REPORT BIBLIOGRAPHY

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taken into account.

DESCRIPTORS.

AD-A172 893 20.6 AD-A172 893

CALIFORNIA UNIV IRVINE DEPT OF ELECTRICAL ENGINEERING

Guided Wave Acoustooptic and Magnetooptic Devices for Integrated Optic Information Processing

Annual rept. 1 Jan 34-30 Aug 85 DESCRIPTIVE NOTE

SCRIPTORS. (U) (UPTICAL WAVEGUIDES, ACCOUSTOOPTICS, SURFACE ACOUSTIC WAVE DEVICES, BRAGG SCATTERING, ZINC DXIDES, GALLIUM ARSENIDES, YITRIUM IRON GARNET, ALUMINUM GALLIUM ARSENIDE, MAGNETOOPTICS, FARADAY EFFECT, OPTICAL CIRCUITS, EPITAXIAL GROWTH, SINGLE CRYSTALS, LIQUID

Cotton Mouton Effect, Gadolinium

Gallium Garnet, PE51102F, WUAFOSP2305B1

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IDENTIFIERS

PHASES

AUG 86

Tsai, Chen S. PERSONAL AUTHORS

AF0SR 80 0288 CONTRACT NO

2005 PROJECT NO

8 TASK NO AFRISE TR AG 0879 MONITOR

UNCLASSIFIED REPORT

magnetostatic suntace waves in YIG 65G optical waveguides very significant progress has been GaAltAs composite waveguides with the device dimensions as small as $0.2\times0.5\times1.0$ cm. For the second project, much diffraction from surface acoustic waves in GaA1As optical waveguides and guided wave magnetooptic diffraction from a complete liquid Both Faracay and Cotton Mouton offects are involved in a the SAW for the first To a lange degree the objectives have been accomplished Zn0 , films on the top of the Ga $\tilde{\Lambda}$ 1As optical waveguides was funther improved to deposit good quality zinc oxide ISTRACT OF The research objectives of the current program year are focused on the basic interactions and physical mechanisms for guided wave acoustooptic Bragg Second, the PF sputtering system fabricate niniaturized acoustooplic Bragg cells in ZnO identified and established the physical mechanisms for interaction in which only the Canada, effect has to be progress has been made. The theoretical study, firmly the non-collinear co-planar interaction configuration and a novel electrode arrangement Jas facilitated to phase epithyy (LPE) system for growth of lange size earther to interpret of contrast to the collinear time a complete facility has been established to Single mede GiA1As optical waveguides has been made in the e-perimental phase. First provide efficient transduction of for the first project established in-house ABSTRACT

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SEARCH CONTROL NO EVNS48 DIIC PEFORI BIBLIDGRAPHY

growth processes were included in this analysis. Equation

modeling options as regards nucleation and particle

CONTINUED

AD A172 892

development, computer coding, and model check out were completed, and parametric studies with the model were

initiated during the course of this program

DESCRIPTORS

SCRIPTORS (U) (COMBUSTION, *OXYGEN, *PERMEABILITY,) UET ENGINE FUELS, *SOLID PROPELLANTS, BORON, HYDROXIDES, CONDENSATION, IGNITION, LIQUIDS, MODELS, REACTION KINETICS, VAPOR PHASES, NUCLEATION, PARTICLES.

PEG1102F, WUAFOSR2308A1

IDENTIFIERS: (U)

GROWTH GENERAL! FILMS, NOZZLES, FLOW

21) ~ AD-A172 892

ATLANTIC RESEARCH COPP. ALEXANDRIA VA

(U) Fuel-Solid Propertant Boron Combustion

15 Nov 84-28 Feb 86 Final rept. DESCRIPTIVE NOTE

AUG 86

King, Merrill K. ; Komar, J PERSONAL AUTHORS

41-5160F REPORT NO

F49620 85 C 0020 CONTRACT NO

2308 PROJECT NO

4

TASK NO

AF05P MONITOR

TR 85-0882

UNCLASSIFIED REPORT

actually performed under a subsequent AFWAL MORI contract condensation of boron oxides and hydroxides (all to boric without seeding with submicron refractory solid particles oxygen by vessel wall materials at rates which swamped the rate of transport across the liquid boric oxide film oxide, with elimination of hydrogen and excess oxygen as permeability of oxygen gas through liquid boric oxide as separating vessels with differing initial oxygen levels. combustion product strams, through a C traceing with complete to rester a for graphs and taken a complete to the analysis for graphs and the control of the with and ration. A burner and two-dimensional nozzle device were were selected from a wide armay of potential candidates Numerous difficulties were encountered in the course of A condensation model treating the flow of bonom loaded resulting in data with an unusably low signal-to-noise required by stoichiometry consideration in the latter procedures for uses in this condensation study (to be this study, the most intractable being the uptake of An apparatus for measurement of the designed hand the burner constructed: for study of a function to temperature was designed and built. as heterogeneous nuclei. In addition diagnostic case: from dry and wet combustion atmospheres, 1700 0 W. C. AE ATT 081

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SEAPCH CONTROL NO EVNS48 DITC REPORT BIBLIOGRAPHY

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UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES

Us. Apparatus for Analysis of Epitosia! Crystal Growth Final rept 1 Aug 8, 1 Oct 54, DESCRIPTIVE NOTE

Dapkus P PERSONAL AUTHORS

AF05P 83 0277 CONTRACT NO

t -PROJECT NO

TASK NO

UNCLASSIFIED REPORT

a por end anto a photochemists, and kinotics of growth it semiconductor this filter is emissorganis chemical vapor deposition The apparatus consists of an epitarial growth directoring to recognos, so richamen du l'incer system nom nue na linear i direct fillenescoppe (17) studies of 19 801199 G. Pagested und recolled for the purchase of an epitimal growth and TipleS that I'm grown in 3100 Selection 10 6 Professional procession programmes and the property of the property of the procession of the processio morning compartation with the inclusion of the situ analysis opportung to revestigate the chamistry In this grant funds were The state of the s The state of the s Seldo Pario, Sepondesp The stable of the control to

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Arengo Montanda grando Grammada Vapor days porteon - PEST102F Figure Flagge აკმა ამემრემრამრამეა WILATTSPICATION

AD A172 889

GAINESVILLE DEPT OF CHEMISTRY FLURIDA UNIV Spatial Distribution Profiles of Ca. Cu. and Mn Atoms and Ions in an Inductively Coupled Plasma by Means of Laser Excited Fluorescence

Interim rept DESCRIPTIVE NOTE:

:Winefordner, J. reah, K. S. Huang X PERSONAL AUTHORS

F49620-84 C 0000 CONTRACT NO

PROJECT NO

ζ TASE NO

TE 86 1024 AF OSR MONTOR

UNCLASSIFIED REPORT

~4cB n10in Spectrochimica Acta, Pub SUPPLEMENTARY NOTE 12 p 1373 1386

plasma system at low observation heights, the profiles of nadial emission profiles also have been measured with an e-cited state atoms and ions resemble each other with a pumped dye laser as an However, possesses a bell Radial distribition profiles of ground shape except for calcium ground state ions which have The profiles of Abel inversion procedure. In our low-flow nebulizer excitation scurce of fluores erice. As a companison copper in an inductively coupled plasma have been tate atoms and or rons for calculum, manganese, minimism in the center of the plasma Coly Jamiaxa co bulsa pajasessa ground state atoms and sons double peaked distribution. _ _

*PLASMAS-FHYSICS+; *CALCIUM; *COPPER; MANGANESE -SPATIAL DISTRIBUTION -LASER INDUCED FLUORESCENCE, ALOMS, IONS, GROUND STATE, DYE LASERS, FACITATION EMISSION, PROFILES, ATOMIC SPECTROSCOFY, Š SHC_dIdDs30

Inductively Coupled Plasmas PE61102F IDENTIFIERS

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STANFORD UNIVIEW DEPT OF MECHANICAL ENGINEERING

d - Armual Report for Contract F49620 84-K-0004

DESCRIPTIVE NOTE Rept for 1 Jan 31 Dec 84,

MAR 85 21P

PERSONAL AUTHORS - Kline, S. J., Ferziger, J. H., ; Johnston, J. P., Moffat R. J.

CONTRACT NO F49620 84-K-0004

PROJECT NO 2307

TASK NO A4

MUNITOR AFOSR TR 086 0869

UNCLASSIFIED REPORT

ABSTRACT (1) This is the annual report covering Theoretical and Empirical Studies of the Basic Structure of Turbulent Shear Flows. Including Separated Flows and Effects of Wall Curvature. This contract includes work on two distinct projects Task A. Construction of zonai models for computation of complex turbulent flows. Task B Study of turbulence structure and heat convection in turbulent boundary layers or concave surfaces.

DESCRIPTORS: (U) \(\tau\text{TURBULENT BOUNDARY LAYER, \tau\text{SHEAR}\)
PROPERTIES, CONVECTION*HEAT TRANSFER; \(\text{WALLS, CURVATURE,}\)
MATHEMATICAL MODELS, TURBULENT FLOW, NAVIER STOKES
EQUATIONS, HEAT TRANSFER

IDENTIFIERS (U) PEG1102F, WUAFUSR2307A4

DITC PEPORE BIBLIOGRAPHY

12 1

NORTH CARGLINA STATE UNIV AT PALETSH DEPT OF MATHEMATICS

Progness Report Number 2 on Contract AFOSR 84 0240

Rept for 16 Jul 31 16 Dec 35 DESCRIPTIVE NITE

136 UAN RG

Campbell_Stephen _ PERSONAL ACTIONS

AFDSR 84 0240 CONTRACT NO

1004 PROJECT NO

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TASE NO

MONITOR

UNCLASSIFIED REPORT

Implicit systems of differential equations O resturably arise on many concust "I and more and parental codes exist for of parties differential equations by the method of lines greatered from himperical or invited achairon of and the solution ". Corential equations Implicit sociems and also called congular, differential aldemand seem state constrained and descriptor. The The magnetic and is a result of the result o mentical work on and and analytic and the analysis or misserically ill conditioned and linging operator coefficient is theory control . industand The size of the and control problems economic models. So prestate and a specification of high the or ender systems is not ने भटन अस्तित व्यक्ति 7. his recently bear Applications will be write to com-· backbard differ • 2ms - Good chams reconcerner and the as a budy the 10 1. time of tripher ridex raphics indus Sala of the Horm of tyve Swelle and reput 1 1 2 E 12 C 1 11 15 C W. C. Diecessia inder your Sections. TUGTZEA Service Co

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22/2 AD A172 880

SEARCH CONTROL NO. EVN548

20/11

MASSACHUSETTS UNIV AMMERST DEPT OF CIVIL ENGINEERING

Parametric Investigation of Factors Influencing the Mechanical Behavior of Lange Space Structures. DESCRIPTIVE NOTE: Final technical rept 1 Nov 82:30 Jun

MAY 86

Nash, William A., Landner, Thomas U PERSONAL AUTHORS

AF05R - 83 - 0025 CONTRACT NO

2302 PROJECT NO

- TASK NO

TP: 85 0858 AFOSR MONITOR

UNCLASSIFIED REPORT

To investigate the relative importance of factors such as solur ridiation pressure, albodo effects, and sputial pressure gradients on structural behavior of large space structures, and II. To investigate structural behavior thermal gradients, differential gravitational effects of a very thin membrane subject to combined internal The investigation has two objectives pressure as cell as mechanical and thermal loadings ABSTRACT

FLEXIBLE STRUCTURES, TRUSSES VIBRATION GRAVITATIONAL FIELDS GPADIENTS, RADIATION PRESSURE, ALBEDO THERMAL STRESSES THIN FILMS MEMBALAIS, COMPUTER PROGRAMS, *STRUCTURAL PROFERITES EQUATIONS OF MOTION, STRESS STRAIN PELATIONS *SPALECRA! . ⊃ DESCRIPTORS

Space structures very lange structures ECHO I satellite, ECHO 2 satellite, PE61102F --WUAF 05R2302B1 IDENTIFIER:

STAPCH CONTROL NO EVN548 DITC REPORT BIBLICGRAPHY

0 MISSISSIPPL STATE UNIV MISSISSIPPL STATE DEPT AEROPHYSICS AND AEROSPACE ENGINEERING Generation of Surface Grids through Elliptic Partial Differential Equations for Aircraft and Missile Configurations ے ت

Interim rept. Apr 85-Mar 86 DESCRIPTIVE NOTE

86 ¥V¥

j Warsi Z PERSONAL AUTHOPS

AASE-86 293 REPORT NO

AF05R 85 0143 CONTRACT NO

2304 PROJECT NO

٨3 TASK NO

TR-85 1068 AFOSR MONITOR

UNCLASSIFIED REPORT

which the coordinates are to be generated. To determine the mean curvature for a given surface in global coordinates. First a piecewise least squares method is used to fit a surface through the given data points. Next. equations These equations depend explicitly on the mean complicated shapes have been obtained to demonstrate the This report is devoted to a computational versatility of the proposed equations. An example of a coordinate leaving the surface has also been presented. curvature and the unit normal vector of the surface in monuclinic coordinate system with contraction in the method of mesh generation in arbitrary surfaces by mesh generation results for various geometrically utillizing a set of elliptic partial differential ABSTRACT

GRIDS/COORDINATES! MESH. NUMERICAL DURES. PARTIAL DIFFERENTIAL EQUATIONS ALGORI THMS LEAST SQUARES METHOD, ELLIPSES, METHODS AND PROCEDURES. j D DESCRIPTORS

WUAFDSR2304A3 PEB1102F ĵ **IDENTIFIERS**

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AD A172

12/1 AD A172 861 NIELSEN ENGINEERING AND RESEARCH INC MOUNTAIN VIEW CA

A Fundamental Study of Jet Flows

Final rept. 1 Mar 82-28 Feb 85. DESCRIPTIVE NOTE:

25P APR 85 Nixon, David PERSONAL AUTHORS:

NEAR-TR-345 REPORT NO. F49620-82-C-0031 CONTRACT NO.

2307 PROJECT NO.

۲ TASK NO AFOSR MONITOR

TR-86-0896

UNCLASSIFIED REPORT

This work investigated the fluid mechanics for multiple impinging jets in a crossflow is available initiated. A very detailed set of experimental results theoretical, computational and experimental study was The theoretical and computational study is concerned An important of impinging jet flows and to this end a combined result is that it appears that even the most sophisticated turbulence model available will not reproduce the experimental results adequately. partly with modeling of the turbulence. Ē ABSTRACT

COLLISIONS, COMPUTATIONS, FLUID DYNAMICS. CROSS FLOW +JET FLOW, +TURBULENCE, FLUID MECHANICS. TIME DEPENDENCE ĵ DESCRIPTORS

JENTIFIERS: (U) Computational fluid dynamics. Impinging jets, WUAFOSR2307A1, PE61102F IDENTIFIERS: (U)

AD A172 861

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SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIOGRAPHY

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AD-A172 853 20:4 AD-A172 853 FILTERS, NUMERICAL ANALYSIS, CONVERGENCE, INVISCID FLOW, COMPRESSIBLE FLOW FLOW INDUSTRIES INC KENT WA RESEARCH AND TECHNOLOGY DIV

Pseudospectral Method for Transonic Flows Around an Airfoil Ĵ

DENTIFIERS: (U) Pseudospectral methods, Spectral
methods. Spectral decomposition, WUAFOSR2307A1, PE61102F

IDENTIFIERS: (U)

Annual rept. 1 Feb 84-31 Jan 85 DESCRIPTIVE NOTE

53P 8 2 MAR

Jou W H. , Mueller, A PERSONAL AUTHORS

F49520-84-C-0027 CONTRACT NO

2 307 PROJECT NO

7 TASK NO

TR 25 0355 AFOSE MONITOR

UNCLASSIFIED REPORT

resolving shock waves in one grid. Several filters have been studied. A low pass filter in the spectral space was expansion required excessive computing time and would not affecting the shock resolution. An algebraic filter that This investigation attempted to construct along the airioil surface and a finite difference scheme not able to stabilize the computition without seriously capable of stabilizing the computations and maintaining indicator of convergence. Attempts to find another form be competitive with a finite volume calculation using a a pseudospectral scheme that is highly accurate and competitive in computational efficiency with existing finite difference or finite volume methods. A hybrid scheme using spectral decomposition in the direction averages the flow variables around a grid point was the sharpness of the shock wave. The residue of the scheme did not decrease with time. The number of supersonic points in the flow field was taken as an An explicit full spectral scheme studied with a Chebyshev polynomial in the other direction was found to be capable of of error norm were not successful . . dense grid ABSTRACT

ANALYSIS COMPULATIONS, HYBRID SIMULATION, SHOCK WAVES, DECOMPOSITION FINITE DIFFERENCE THEORY, MATHEMATICAL * FPANSONIC FLOW . * AIRFUILS, SPECTRUM - [] DESCRIPTORS

AD A172 853

AD A172 853

UNCLASSIFIED

EVNSAB PAGE

EVN548 SEARCH CONTROL NO DIIC REPORT BIBLISGRAPHY

AD A172 647

FLORIDA UNIVIGATINESVILLE DEPT OF CHEMISTRY

Fluorescence Spectrometer for the Analysis of Trace to An ICP-Excited ICP Resonance Monochromator and Major Sample Constituents

Interim rept DESCRIPTIVE NOTE

83

100

Winefordner, J ب Long つ Krupa, R PERSONAL AUTHORS

F49620-84-C-0002 CONTRACT NO

AFOSR MONITOR

TR - 86 - 1025

UNCLASSIFIED REPORT

in Spectrochimica Acta, v408 n10-Pub 12 p1485-1494 1985 SUPPLEMENTARY NOTE

Detection limits are comparable to ICP-AES By aspirating the sample into the source ICP and measuring its emission Plasma emission background and spectral interferences are minimal compared to ICP-AES because of the selectivity of linear dynamic ranges up to 50 million can be achieved using the second plasma as a resonance monochromator, fluorescence of a sample aspirated into a second ICP alleviate spectral interferences which may occur in STRACT: (U) A 20 g/l solution of the element of interest is aspirated into a 1500 W Ar ICP and the resulting emission used to excite atomic and ionic the selectivity of the fluorescence technique. The alternative to emission spectrometry in order to complex sample matrices, without the need for an present system should be considered as a viable expensive, high resolution monochromator ABSTRACT

*ATOMIC SPECTROSCOPY, PLASMA DEVICES, EXCITATION, DYNAMIC *QUANTITATIVE ANALYSIS, *FLUORESCENCE RANGE, REPRINTS, ATOMIZATION Ē DESCRIPTORS

ICP: Inductively Coupled Plasmas! AFS Atomic Fluorescence Spectroscopy: Resonance monochromators. Atomic fluorescence Spectroscopy IDENTIFIERS

AD A172 847

2074 AD A172 829

TORONTO UNIV DOWNSVIEW (ONTARIO) INST FOR AEROSPACE STUDIES

Some Aspects of Shock-Wave Research

Interim rept. DESCRIPTIVE NOTE:

116P JAN 86 PEFSONAL AUTHORS: Glass, L. I.

UTIAS-REVIEW-48 REPGAT NO. AFDSR-82-0096, DNA001-85-C-03F8 CONTRACT NO.

PROJECT NO

A1 TASK NO.

TR-86-0894 AFOSR MONITOR

UNCLASSIFIED REPORT

Presented at the AIAA Aerospace Sciences Meeting (24th) Reno, Nv 7 Jan 86. SUPPLEMENTARY NOTE:

devoted to a spicific shock wave research problem, namely, data are presented in M sub s. Theta sub W-plots for argon, nitrogen, oxygen, air, carbon-dioxide, Freon 12 and sulfurhexafluoride, in order to check the validity of the analytically predicted regions and transition lines Good agreement was obtained, yet shock theory to predict what type of reflection results when a planar shock wave M sub s, in a shock tube, collides with a sharp compressive wedge of angle, Theta sub w Experimental (interferometric and other optical) of the four types of reflection. Some disagreements are Our interferometric isopycnic data results from a solution of the inviscid Euler equations using a CRAY I computer. Good agreement was obtained, ye it would be important to obtain new data by solving the perfect and imperfect gases. Consideration is given to phenomena on earth and in space to provide some useful background material. The major portion of the paper is what has been achieved to date by using two and three A few examples are given of shock wave are also compared with state of the art computational pseudostationary oblique shock wave reflections in noted and discussed. ABSTRACT: (U)

AD-A172 829

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A172 829 CONTINUED

Navier Stokes equations, as well as the rate equations for imperfect gas excitations, in order to judge the improvement obtained with real flow interferograms.

DESCRIPTORS: (U) 'SHOCK WAVES, 'FLUID DYNAMICS, MONTE CARLO METHOD, HEIGHT OF BURST, FLOW FIELDS, INTERFEROMETRY, REFLECTION, SHOCK TUBES, INVISCID FLOW, NAVIER STOKES EQUATIONS, ARGON, NITROGEN, OXYGEN, AIR, CARBON DIOXIDE, FLUORINATED HYDROCARBONS, SULFUR COMPOUNDS, CANADA

IDENTIFIERS (U) Pseudo stationary Sulfur hexafluorides, Euler equations, PE61102F, WUAFOSR2307A1

AD-A172 827 21/2 21/1

PURDUE UNIV LAFAYETTE IND THEXMAL SCIENCES AND PROPULSION CENTER

(U) Fuel Spray Ignition by Hot Surfaces and Aircraft Fire Stabilization.

DESCRIPTIVE NOTE: Final rept. 15 Nov 81-31 Mar 86.

JUN 86 33P

PERSONAL AUTHORS: Skifstad.J. G.; Lefebvre, A. H.; Murthy S. N.;

REPORT NO. LMS/AFOSR-COMB/83

CONTRACT NO. AFDSR-82-0107

PROJECT NO. 2308

TASK NO. A2

MONITOR: AFOSR TR-86-0856

UNCLASSIFIED REPORT

surface was conducted in a vertical axisymmetric duct. In addition to measurements of the wall temperature for ignition. In Task II two combustion tunnel facilities were used to investigate the stabilization of aircraft fires. Results showed that the shape of a bluff-body flameholder affects its stability characteristics through small opening or vent in a side wall, when there is a small flow through the cavity; and (2) Fluid dynamics and properties of the single-vortex flow pattern are markedly gaseous fuel through a protrusion of different shapes and ignition and flame stability characteristics of a jet of fraction of fuel vaporized were measured in the boundary superior to those of the double vortex pattern. In Task layer at surface temperatures just below that required its influence on the size and shape of the wake region. necessary for ignition, local measurements of velocity In Task I an experimental study of the Another significant finding was that the flameholding Entrainment of an external flow into a cavity, with a ignition of Jet-A fuel sprays b/ an isothermal hot turbulence intensity, fuel concentration, and the III experimental studies were conducted on: +1+

AD-A172 827

DITC PUPURY RIBUIDGRAFFY STARCH CONTROL NO EVN548

AD-A172 827 CONTINUED

heights in the call of a cavity with a small flow of air through the cality

DESCRIPTORS U 'FUEL SPRAYS' IGNITION 'FLAMES.
*AIRCRAFT FIRES ENTRAINMENT VOIDS FLAME HOLDERS BLUNT
BODIES. STABILIZATION WAKE VORTICES CAVITIES JET
ENGINE FUELS VAPORS, DROPS, BOUNDARY LAYER, SURFACE
TEMPERATURE, MCDEL TESTS, FLOW FIELDS, BLOWOFF, FLUID
DYNAMICS, AIR FLOW FLOW VISUALIZATION, THREE DIMENSIONAL
FLOW GAS TURBINES, RAMJET ENGINES

IDENTIFIERS :U - Jet A fuel, Flame stability, Reactive flow, Blowoff velocity

AD A172 826 2074

RUTGERS - THE STATE UNIV NEW BRUNSWICK N J DEPT OF MECHANICAL INDUSTRIAL AND AFROSPACE ENGINEERING

(U) Theoretical Investigation of Three-Dimensional Shock Wave-Turbulent Boundary Layer Interactions. Part 4.

DESCRIPTIVE NOTE: Interim rept. 1 Oct 84-30 Sep 85,

JAN 86 74P

PERSONAL AUTHORS: Knight, Doyle D.

REPORT NO. RU-TR-163-MAE-F

CONTRACT NO. AFOSR-82-0040

PROJECT NO. 2307

TASK NO. A1

MONITOR: AFOSR TR-86-0893

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 1, ADIA127 118.

observed to be insensitive to the Courant number. The $3\cdot D$ turbulence interactions research concentrated on the $3\cdot D$ Lomax, This year research efforts focused on both 2-D and measurements due to the inability of the turbulence model In the turbulent Reynolds stresses. Calculated Reynolds stresses examined for a series of separated 2-D compression corner four separate compression corners using 2-D compressible algebraic turbulent eddy viscosity model of Baldwin and Results were compared to earlier computations using the were observed to differ significantly from experimental Navier-Stodes conde with MacCormack's hybrid algorithm. flows at Mach 2 and 3. Calculations were performed for Beam Warming algorithm, and recent experiment data for 3-D turbulent interactions. A theoretical model was results using the MacCormack hyprid algorithm were A theoretical model consists of the sharp fin and on the 3-0 swept compression corner Reynolds-averaged 3-D compressible Navier-Stokes equations, with turbulence incorporated using the to incorporate the multiple scale effects of the turbulence structure downstream of reattachment ĵ ABSTRACT:

AD-A172 826

EVN54B SEARCH CONTROL NO. DIIC REPORT BIBLIOGRAPHY

CONTINUED AD A172 826

used the Jones-Launder turbulence model) and experimental former case, the computed flowfield for the 20 deg sharp fin at Mach 3 and a Reynolds number of 930,000 was compared with the calculated results of Horstman Iwho data of the Princeton Gas Dynamics Lah. Overall comparison with experiment was very good ESCRIPTORS: (U) 'TURBULENT BOUNDARY LAYER, 'SHOCK WAVES.
MATHEMATICAL MODELS, COMPRESSIBLE FLOW INTERACTIONS.
THREE DIMENSIONAL FLOW, NAVIER STOKES EQUATIONS.
EDDIES/FLUID MECHANICS), FLOW SEPARATION SUPERSONIC FLOW.
FLOW SEPARATION. STRESSES, TWO DIMENSIONAL FLOW.
SUPERSONIC FLOW, VISCOUS FLOW, INVISCID FLOW. FLUID DYNAMICS. COMPUTATIONS. ALGORITHMS, HYBRID SYSTEMS DESCRIPTORS

speed flows. Viscous inviscid interactions. Shock boundary layer interactions. Computational fluid dynamics. PE61102F. WUAF0SR2307A1 Corner flow, Reynolds stresses. High IDENTIFIERS:

12/1 AD-A172 821 FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

(U) Optimal Assembly of Systems Using Schur-Functions and Majorization.

Technical rept. DESCRIPTIVE NOTE:

JUL 86

El-Neweihi Emad ; Proschan, Frank Sethuraman, Jayaram ; PERSONAL AUTHORS:

TR-M735 REPORT NO.

DAAL03-86-K-0094, AF0SR-85-0320 CONTRACT NO.

AFUSR, ARO MONITOR:

TR-86-193, 23699, 6-MA

UNCLASSIFIED REPORT

reliability function we show that the same partitioning A * provides an optimal assembly. The results of this paper are based on the well known techniques of Schursystems corresponds to a partitioning A of the components to the different systems. When the components act of n systems from components of k types. Special cases of components from more than one type. An assembly of the n studied the case of a single type of components. Derman. Leiberman and Ross (1972) corsidered the case where each generalize the ideas of both of these papers to the case This paper considers the optimal assembly such a problem have been studied earlier in the literature. E Neweihi, Proschan and Sethuraman (1986) system consisted of one component of each of k types. functions and majorization. This makes them clear and components and under some general conditions on the simple and at the same time more general that in the intuitively motivated partitioning A + provides the where the systems may consist of varying numbers of independently, we show in sections 2 and 3 that an section 3, we allow each system to have dependent optimal assembly under many different criteria papers cited. (Author) ABSTRACT

*FUNCTIONS MATHEMATICS), METHODOLOGY PARTS, ASSEMBLY, OPTIMIZATION, RELIABILITY DESCRIPTORS

DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A172 821 CONTINUED

AD A172 813 13/13 22/2

IDENTIFIERS: U Schur functions LPN AFOSP 82 0007

Ur Increasing the Margin of Stability of Arbitrarily Finite Modes of Flexible Large Space Structures with Damping.

GAINESVILLE DEPT OF MATHEMATICS

FLORIDA UNIV

DESCRIPTIVE NOTE. Annual technical rept. 1 Sep 85-3 Aug 86

AUG 86 6P

PERSONAL AUTHORS: Lasiecka, I.; Iriggiani, R.;

CONTRACT NO. AFOSR-84-0365

PROJECT NO. 2304

TASK NO. A1

MONITOR: AFOSR TR-86-0878

UNCLASSIFIED REPORT

implementable boundary feedback of a specific class which solutions (homogeneous boundary conditions). An analysis distribution of the feedback system as predicted by, and solutions with the same upper bound enjoyed by the free stability of the remaining modes and, moreover, (3) guarantee the exponential uniform decay of all feedback (wave equation) with damping, in an arbitrary number of dimensions. The object is to provide a simple. STRACT: (U) This research project focuses on a canonical component of flexible large space structures. which is modeled by a hyperbolic second order equation many modes while (2) at least preserving the margin of of the distributed parameter model is given by the cowill (1) increase the margin of stability of finitely principal investigators, which provides a theoretical constructive way. Numerical implementations of the theoretical proof show a behavior of the eigenvalues solution of the above problem in an essentially in agreement with, the theoretical results dimensions

DESCRIPTORS: (U) *STRUCTURES. *STABILITY. SPACE SYSTEMS. FLEXIBLE STRUCTURES. DAMPING

IDENTIFIERS (U) Large space structures, WUAFOSR2304A1,

AD-A172 813

SEARCH CONTROL NO. EVN54B DTIC REPORT BIBLIOGRAPHY

AD-A172 812

CONTINUED

AD-A172 813

PE61102F

20/4

NOTRE DAME UNIV IN DEPT OF AEROSFACE AND MECHANICAL ENGINEERING (U) Vortex Loop Dynamics - A Phenomenological Model for Turbulent Boundary Layer Structure

Annual rept. 1 Jan-31 Dec 83, DESCRIPTIVE NOTE:

28P 84

Doligalski, Thomas L. PERSONAL AUTHORS:

AF0SR-82-0115 CONTRACT NO.

2307

PROJECT NO

A2 TASK NO

AF0SR TR:86-0867 MONITOR

UNCLASSIFIED REPORT

convecting stretching vortex loop is a major component of vicinity of solid surfaces. Studies of normal and oblique impacts with solid surfaces under conditions of no imposed flow are detailed, as well as oblique impacts in uniform and linear shear flows. The experimental and vortex loops in the vicinity of solid surfaces and under the influence of a crossflow is detailed. These results are important if the dynamics of the coherent structures Unsteady development of three-dimensional oblique impacts in uniform flow. The analytic effort was Results are given propagate across the test section and interact with a large plexiglass plate. The rings are marked with smoke tracers. The subsequent interaction is recorded using devoted to improving the efficiency of the 3 D inviscid vortey trajectory program. This program uses a modified Biot Savart integration technique to consider the these flows. A new piston-orifice vortax generator and present within the turbulent boundary layer are to be understood--it has long been recognized that the 3 D unsteady inviscid development of vortex structures in repeatable vortex rings in air, which are allowed to for normal and oblique impacts in still air and for test section was designed to provide reliable and analytic results were compared and excellent high speed motion picture photography. ĵ ABSTRACT

AD-A172 812

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CTT RIFUEL BIRLINGRAPHY STARCH CONTROL NO EVN548

AD A172 812 CONTINUED

correspondence between the two techniques was found. These studies indicate that substantial loop growth occurs due to the presence of an imposed shear, and it is this interaction between the loop and the imposed crossflow that plays a dominant role in the loop deformation process.

DESCRIPTORS UNITURBULENT BOUNDARY LAYER ROUNDARY LAYER FLOW VORTICES LOOPS STRUCTURAL PROPERTIES.

THREE DIMENSIONAL FLOW CROSS FLOW SOLIDS PLATES.

IMPACT RINGS FLOW VISUALIZATION HTGH SPEED PHOTOGRAPHY INTERACTIONS DEFOPMATION SHEAR PROPERTIES. COMPUTER PROGRAMS NUMERICAL INTEGRATION

IDENTIFIERS Up Vortex loops, Oblique impact, Shear flow, WUAFDSR2307A2, PE61102F

AD A172 811 22/2

MCINTOSH STRUCTURES DYNAMICS INC PALO ALTO CA

•U) Investigation of Interactive Structural and Controller Synthesis for Large Spacecraft

DESCRIPTIVE NOTE: Final rept. 1 Mar 84-30 Oct 85,

JAN 86 45P

PERSONAL AUTHORS: McIntosh, Samuel C., Jr.; Floyd, Michel A.

REPORT NO. TR-86-1

CONTRACT NO. F49620-84-C-0025

PROJECT NO. 2302

TASK NO. B1

MONITOR - AFOSR TR-86-0900

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Integrated Systems, Inc.

ABSTRACT: (U) A technique is developed for least-weight optimal design of a tubular-truss space structure, subject to constraints on its natural frequencies and its open-loop disturbance-rejection properties. The disturbance-rejection properties of the structure are measured by disturbance-to-regulated-variable grammians. It is shown how this technique can be embedded in a model-reduction scheme based on internal balancing. Examples treated include a simple dumbell model and csdl model no.

DESCRIPTORS: (U) *STRUCTURAL ENGINEERING, *SPACECRAFT, *CONTROL SYSTEMS, FLEXIBLE STRUCTURES, TUBULAR STRUCTURES. OPTIMIZATION, MANEUVERABILITY, VIBRATION, TABLES(DATA)

IDENTIFIERS: (U) WUAFOSR230281, PE61102F

SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOGRAPHY

CONTINUED

AD-A172 798

DESCRIPTORS

11/2 AD - A172 798 SRI INTERNATIONAL MENLO PARK CA

SCRIPTORS: (U) +CONCRETE, +TENSION, +MICROCRACKING, TENSILE PROPERTIES, TEST METHODS, TENSILE TESTERS, CRACK PROPAGATION Observations and Analysis of Microcracks Produced in Dynamic Tension Tests of Concrete

IDENTIFIERS Final rept. 1 May 82-31 May 86 DESCRIPTIVE NOTE

LPN-PYU-4451, WUAFOSR2307C2, PE61102F

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99P JUL 86

Gran, James K., Seaman, Lynn PERSONAL AUTHORS

+ 49520 82 - K - 0021 CONTRACT NO

2 207 PROJECT NO

C5TASK NO

TP 35 0855 AFOSR MONITOR

UNCLASSIFIED REPORT

dondrete specimen after a dynamic tension experiment; (5) An important need in the study of dynamic presence of confining pressure at a strain rate of about 20 st (2) A preliminary set of experiments was conducted concrete at a strain rate of about 2015; (3) These experiments were interpreted with numerical calculations to estimate the dynamic strength enhancement, the apparent striin-softening behavior of the concrete, and tensile failure in concrete and brittle geologic materials is to characterize the failure process for a wide range of strain rates. The objective of this fourdeveloped to produce tensile failure in concrete in the to study the unconfined and confined tensile failure of (4) A technique dynamic tensile failure of concrete at strain rates between 10 s and 100 s. The primary accomplishments of uss developed to observe the microcrack damage in the propagation elecity may be the source of the tensile this program were: (1) A new experimental method was year research program was to develop and demonstrate strength artercement observed in the dynamic tension experimental and analytical techniques to study the tensile specimens, microgracks were charted for a growth shoved that crack the extent of damage in the specimens: Analyses of micrograph CALCOLI LIGHT. PAGE

SETUDIA CONTROL NO EVNS48 THE REPORT BLO COUNTY

20 11 . . AD- A172 733 PITTSBURGH PA DEPT OF MECHANICAL CARNEGIE MOLLON UNIT ENGINEERING The Influence of Electric Current on Crack Propagation in Ibermal Fatigue Tests

SSCRIPTURS: (U) *THERMAL FATIGUE, CRACK PROPAGATION.
FLECTRIC CURRENT HEATING CRACKS, STRESSES, TEMPERATURE DISTRIBUTION, TEST METHODS, FATIGUE TESTS (MECHANICS)

DESCRIPTURS: (U) *THERMAL F *FLECTRIC CURRENT HEATING.

are discussed

Crack tips, PE61102F, WUAFOSR230282

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IDENTIFIERS

The validity and consequence of some of these assumptions

CONTINUED

AD A11.2 739

Final rept 1 Aug 84-31 Jul 85 DESCRIPTIVE NOTE

FEB 86

Griffin, Jerry H PERSONAL AUTHORS

1-52113 REPORT NO AFPSR 84-0203 CONTRACT NO

2302 PROJECT NO

82 TASK NO AF0\$P TR 86-0886 MONITOR

UNCLASSIFIED REPORT

relative discrepancy between conventional heating fatigue The use of a benchmark or model problem to a singular heat source. The singular heat source does not result in a temperature singularity, however, so the temperature remains bounded at the crack tip. The testing and resistance heating fatigue is quite dependent primarily thermal and electrical conductivity and linear thermal expansion stress intensity factor and local temperature field were developed. These expressions are estimated in light of estimate errors in stress intensity factors and local temperatures in thermal mechanical fatigue testing which uses large electric currents for heating has shown that specimen results in a singular current and, consequently Materials exhibiting low electrical resistance and high thermal expansion are, in general, more susceptible to this mode of thermal loading. Simple expressions for estimating the contribution of electric current to the some basic assumptions made during problem formulation this mode of testing results in a more severe stress state than if conventional heating methods are used. reason for the more severe stress state is that the application of a constant voltage across a cracked temperature remains bounded at the crack tip on crack size and materials properties. Ð ABSTRACT

AD-A172 739

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SEARCH CONTROL NO. EVN548 DTIC REPORT BIBLIOGRAPHY

> 12, 1 AD- A172 736

AD A172 736

PEG1102F, WUAFOSR2304A1

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IDENTIFIERS

CONTINUED

SC DEPT OF MATHEMATICAL SCIENCES CLEMSON UNIV

(U) Control Coordination of Large Scale Hereditary Systems DESCRIPTIVE NOTE

Annual rept 1 Jul 34-1 Jul 85

JIS

Fennell Robert | Reneta (PERSONAL NUTHORS

AF05R 84-0236 CONTRACT NO

けいとい PROJECT NO

< TASK NO AF05P TP 86 0895 MONITOR

UNCLASSIFIED REPORT

basic problem considered is how to add constraints of the information which enable all components to achieve their Scale System in other related with gone, thic, algebraid paper entitled Camonical Forms for Essentralized Control lange scale hereditary systems, his been developed. The This is reported in a Hellingar integrable functions provides the setting for Titum materices have the deformption of system operation or the analysis of A decentralized control strategy, which papers entitled Decentralized Corne, Lifer Large Scale optimization problems. This work has been reported in Hereditary Systems and Control C.o. dination for Lange allows some level of autonomous component control for objectives. The approach requires that component interactions be suitably limited so that variational methods can be used to determine corporat controls. A repreducting Mernin Hillbert space of se autonomy in the component objectives and to arrange exchanges of and graph theoregic properties or abolice of companent control laws been characterized which allow e independent (v ABSTRACT

SCRIPTORS OF COMMINDER OF COMMINDER OF SCRIPTIONAL METHODS HITBRATIONS CORPUSTIONAL METHODS HITBRATIONS CORPUSTIONS MATHEMATICS STOCKHOSTIC PROGRAMMENT OF CORPUSTIONS MATHEMATICS STOCKHOSTIC PROGRAMMENT OF CORPUSTIONAL OF CONTROL THELLY SH014180S30

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DESCRIPTIVE NOTE Final technical rept 1 Jan 85-31 Jan

AUG 85

PERSONAL AUTHOPS MACKENZIE JOHN D

CONTRACT NO AFOSR PS 0121

PROJECT NO 24

TASK NO A2

MONITOR AFOSE TR-85-0377 UNCLASSIFIED REPORT

ABSTRACT: Use A unique glove box system has been built which permits the melting and fabrication of halide and chalcohalide glasses under controlled atmospheres. Glass fibers have been prepared inside this system and their tensile strengths and viscoelastic properties measured in situ. Further the microstructures of glasses and ceramics prepared as well as their infrared transmission were investigated without the need to expose the samples to the external atmosphere. The system has been used to perform research and to train students in the preparation of wiltrapure glasses and cenamics.

DESCRIPTORS UPGLASS CERAMIC MATERIALS FINDUSTRIAL PRODUCTION MELTING FABRICATION CHALCOCENS HALIDES. COLTROLLED ATMOSPHERES FIBERS TENSILE STRENGTH, VISCOELASTACTIY MICROSTRUCTURE INFRARED RADIATION, TRANSMITTANCE PURITY

IDENTIFIERS UP PEGI102F WUAFOSR2917A2

FLORIDA UNIVERSAINESVILLE DEPT OF ENGINEERING SCIENCES

U. Automated Mechanical Test and Environmental Control Equipment and Data Acquisition and Analysis Equipment.

DESCRIPTIVE NOTE Final rept. 1 Aug 83-31 Mar 85.

MAY 86

PERSONAL AUTHORS: Malvern Lawrence E. (Ross, C. (Sun, C.)

CONTRACT NO. AFOSR-83 0293

PROJECT NO 2917

TASK NO. A1

MONITOR: AFOSR

TR-86-0889

UNCLASSIFIED REPORT

ABSTRACT (U) This report identifies equipment actually acquired under a Dep of Defense University Research Instrumentation Program (FY 1983) grant to the Uriversity of Florida. It also includes a summary of the research projects on which the equipment has been or will be used.

DESCRIPTORS: (U) 'DATA PROCESSING EQUIPMENT TEST EQUIPMENT, CHAMBERS, INSTRUMENTATION, TRANSIENTS, UNIVERSITIES, PROCUREMENT, COMPOSITE MATERIALS, METALS, BALLISTICS, CEMENTS, CONCRETE, DATA ACQUISITION, DIGITAL RECORDING SYSTEMS

IDENTIFIERS: (U) University research, PE61102F, WUAFOSR2917A1

271 A DA

DITC REPORT BIBLIGGRAPHY SEARCH CONTROL NO EVN54B

NEW MEXICO UNIV ALBUQUERQUE DEPT OF MECHANICAL ENGINEERING

(U) Structure Dynamic Theories of Fracture Diagnosis
DESCRIPTIVE NOTE Technical rep. Oin Dec 85,

#AR 86 137P

PERSONAL AUTHORS: JU Frederick D

REPORT NO ME 134-85-AFOSR-993-2

CONTRACT NO FOSR 85:0085

PROJECT NO 2302

TASK NO

MONITUR AFGSP

: AFGSP TR 86-0890

UNCLASSIFIED REPORT

Availability Document partially illegible

ABSTRACT (i) Two model theories of damage diagnosis are presented the model frequency thems. Disea on the charges in simple frequency thems. Disea on the charges in simple frequencies of simple frequencies of the intensity of simple fracture news, so the intensity of simple fracture news, so the intensity of simple fracture news, so the report reveals the uncontinuous of the model (second theory The francture in localizing a fraction damage.

DESCRIPTORS -U -CPACKS, HEAMS SIRUCTURAL +DAMAGE, FRACTURE MECHANICS- DIAGNOSIS-CENERAL THEORY, STRUCTURE MECHANICS- ANALOGIES CIRCUITS FREQUENCY, STRUCTURAL RESPONSE, EXCITATION INFENSITY POSITION-LOCATION DAMPING

Ingentifies II Modal frequency throngy Transmissib litz though Fraction E. Greating Discourt Fractions Modern Fraction Company Historics PEGI102F, WorkDSD2-39-2

AD-A172 727 20/4 12/1

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF AERONAUTICS AND ASTRONAUTICS

(U) Computational Methods for Complex Flow Fields

DESCRIPTIVE NOTE: Annual rept.

JUN 86 47P

PERSONAL AUTHORS Murman, Earll M. (Baron, Judson R.)

CONTRACT NO AFOSR-82:0136

PROJECT NO. 2307

TASK NO. A1

MONITOR, AFOSR TR-86-0863

UNCLASSIFIED REPORT

ABSTRACT: (U) Development of solution algorithms for complex flowfields is the continuing objective of the research. The physical events are used to determine appropriate subdomains for both preselected and adaptive divisions of the field. Adapted embedding procedures have been completed for two-dimensional Euler flow with considerations of most suitable decision parameters. Bevelopment of an algorithm which combines cell and rodal centered features continues for applications to less restrictive embedded topology. A mixed implicit explicit approach for different coordinate directions is under study for Navier-Stokes flow. The Dec. 1984 derusalem Workshop is summarized briefly. Perwords. Zuler equations: Embedded grids, Adaptive grids, Airfoils, and Computational Fluid Dynamics.

DESCRIPTORS (U) FILOW FIELDS, FAIRFOLLS, FALGARITHMS, FLUID DYMAMICS, COMPUTATIONS, TWO DIMENSIONAL FLOW, NAVIEE STOFES EQUATIONS, EMBEDDING, GRIDS, ADAPTIVE SYSTEMS.

IDENTIFIERS (U) Complex flow fields, Computational fluid dynamics, Euler equations, Embedded grids. Adaptive grids, PE61102F, WUAFOSR2307A1

JUAPON CONTROL NO EVN548 DITC PERMITTERMENT

AD 7172 715

VIRGINIA FRESTECHNIC INST AND STATE UNIV RUSS SPURG DEPT OF ENGINEERING SCIENCE AND MECHANICS

Maneuver ing Vibration Control, and Structure Control Design Optimization of Closed Loop Eigenvalues Iteration for Flexible Spaceuraft

DESCRIPTIVE NUTE Final rept Jun 85-May 96

151P

Junkins, John L. PERSONAL AUTHORS.

F49620 -83 K-0032 CONTRACT NO

2302 PROJECT NO

<u>~</u> TASK NO AFOSR MONITOR

TR 85-0905

UNCLASSIFIED REPOR'

Prepared in cooperation with Texas A College Station SUPPLEMENTARY NOTE. and M Univ

algorithms are presented for tuning linear regulators vis-Spacecraft dynamics and control. Perturbation methods are A simultaneous structure/controller design optimization algorithm is developed. Peywords: active control; structural analysis; presented for computing nonlinear open and closed loop This report summarizes new results on optimization integrated design; spacecraft dynamics. optimal maneuver control Homotopy optimization a-vis eigenvalue placement and robustness. ABSTRACT: /U:

SCRIPTORS OUT ACONTROL SYSTEMS, SPACECPAFT, SPACE SYSTEMS, FLEST MANEUVERS, CLOSED LOOP SYSTEMS OPEN LOOP SYSTEMS, NONLINEAR SYSTEMS, OPTIMIZATION ALGORITHMS, VIBRATION, CONTROL, EIGENVALUES DESCRIPTORS

Large space structures, WUAFOSR2302B1, <u>-</u> IDENTIFIERS PE61102F

50 6 AD A172 713

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IDWA STATE UNIV AMES

U) Microwave Acoustics Device Study

Final rept 1 Sep 84-31 Aug 85 DESCRIPTIVE NOTE:

490 JUL 86

Lakin, K PERSONAL AUTHORS

AF05R-84-0386 CONTRACT NO.

2306 PROJECT NO.

B2 TASK NO

TR-86-0860 AFOSR MONITOR

UNCLASSIFIED REPORT

acoustic boundary value problems by the finite difference of a single one year study of the device physics aspects of the thin film bulk acoustic wave resonator. The study This final report summarizes the results and dimensional numerical analysis modeling of microwave resonators, Bulk acoustic waves, Diffusion of Zn. method. Keywords: Microwave acoustics, Thin film diffusions in GaAs as a precursor to temperature coefficient studies, and refinements to the two involved high Q trapped energy resonators, zinc ĵ

DESCRIPTORS: (U) *RESONATORS, *THIN FILMS; GALLIUM ARSENIDES, ZINC, FINITE DIFFERENCE THEORY, DIFFUSION

coefficients, Mode trapping, WUAFOSR2306B2, PE61102F DENTIFIERS: (U) BAW(Bulk Acoustic Waves Acoustics(Microwave) High Q resonators, Thermal IDENTIFIERS

DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A172 711 21/2 21/1

SCIENCE APPLICATIONS INTERNATIONAL CORP. CHATSWORTH CA COMBUSTION SCIENCE AND ADVANCED TECHNOLOGY DEPT

combustors. Flame stabilization, Pressure interactions. Turbulent reacting flow, WUAFOSR2308A2, PE61102F

CONT INUED

AD-A172 711

(U) Pressure Interactions in Supersonic Combustion.

DESCRIPTIVE NOTE: Final rept 1 Jun 84-28 Feb 86.

JUN 86 58

PERSONAL AUTHORS: Edelman.R. B :Bragg.W N

CONTRACT NO F49620 84-C-0064

PROJECT NO 2308

TASK NO A2

MONITOR AFOSE

TP 86 0876

UNCLASSIFIED REPORT

kingtics limitation on flame stabilization and combustion combustion was carried out to identify specific research was prepared. This modular model is designed to be used Turbulence turbulent transport and mixing rater that are observed phenomena is delineated. A modular model computer code modeling Sudden expansion combusters Dump combustons requirements in modeling turbulent rescting supersonic supersourd flows. An approach to the modeling of these for the invivous of sudden expansion dumps combustons nocket married and ducted nocket parametrically in evaluating effects such as chemical flows. The direct effects of pressure gradients and pressure fluctuations on turbulence were found to be potentially responsible for certain of the trends in A detailed assessment of supersonic Me words: Pressure inforations officiency in integra? $\stackrel{-}{\Rightarrow}$ combustors ABSTRACT

DESCRIPTOPS U SUPERSONIC COMBUSTION, COMBUSTORS.
FURBULENT FLOW SUFERSONIC FLOW REACTION KINETICS.
TRANSPORT FROMESTIES PRESSURE GRADIENTS, FLAME
PROPAGATION, MIXING FATES, EFFICIENCY, FUEL INJECTION
DUCTED POSEFTS INTEGRAL ROCKET RAMJETS FLAMES,
STABILIZATION FRONSE VARIATIONS INTERACTIONS.
MODULAR CONSTRUCTION COMPUTER PROGRAMS

DEWLIFIEPS 19 Ounp combustury Sydden manneton

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AD A172 711

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CALIFORNIA (MI. + 05 ANSFLES DEL 101 PALSIOS

Us. Characteriz tion of infrared Properties of Layer Semiconditions.

FINERARED SPECTROSCOPY CZOCHRALSKI CRYSTALS, RAMAN SPECTPA, LIGHT SCATTERING FREQUENCY MODULATION, LOW NOISE, SOLID STATE FLECTRONICS FIELD EFFECT TRANSISTORS, CHARGE COUPLED DEVICES, EPITAXIAL GROWTH

Photo Induced Transient Spectroscopy

WUAFOSR2305B1

(n)

IDENTIFIERS PE61102F Annual screntific rept 1 May 84 31 Aug DESCRIPTIVE NOTE

AUG 86 123F

PERSONAL AUTHURS Braunstein, Rubin

CONTRACT NO AFOSR-83-0169

PROJECT NO

<u>~</u>

TASK NO

MONITOR, AFOSP TR-85-0951 UNCLASSIFIED REPORT

Raman backscattering was employed to measure the shift in Infrared wavelength modulation absorption and 0.40 eV as well as plateaus and thresholds at higher energy. The absorption band at 0.37 eV is interpreted as due to the intra center transition between levels of depletion layer widths due to various surface treatments measurements allow us to give credence to changes in absorption at levels of 001/cm. The measurements reveal spectroscopy was employed in the spectral range of 0.3-1 A technique of photo-mixing was employed to measure the drift velocities in the hot carrier small distance accidental from impurity. The absorption band near 0.40 two resonant type peaks with fine structures near 0 39 the frequency of unscreened and screened phonon plasma defect complex. Photo induced transient spectroscopy technique also reveal out annealable level at 0.42 eV. characterize as belonging to a structural multi level 45 eV to study deep level impurities in undoped semimode in GaAs in a study of the change in the surface insulating GAAs grown by the liquid encapsulated eV can be animaled out by heat treatment and is The sensitivity of the regimes in Coallium Arsenide Czochnalski technique. . -ABSTRACT

DESCRIPTORS UPPARSORPTION SPECTRA, FGALLIUM ARSENIDES

AD A 172 692

AD-A172 692

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PAGE

EVN54B

148

DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A172 687 14/2 20:1 9:2

KENTUCKY UNIV LEXINGTON WENNER-GREN RESEARCH LAB

(U) Signal Processing in Ultrasonic NDE (Nondestructive Evaluation).

Filters, Coherent noise, Flaw sizes. Autoregressive Models. Impulses. Homomorphic filters, Deconvolutions, Spline Functions, PE61102F, WUAFOSR2306A2

CONTINUED

AD-A172 687

DESCRIPTIVE NOTE: Final technical rept. 15 Aug 84-14 Nov

JUL 86 47

PERSONAL AUTHORS: Bhagat,Pramode K. Leon,Benjamin J.

CONTRACT NO AFOSR-84-0223

PROJECT NO 2:06

TASK NO A2

MONITOR - AFOSR TR-86-0904

UNCLASSIFIED REPORT

ultrasonic nondestructive evaluation. NDE_ methodology is to reliable and rapidly obtain information regarding material samples are illustrated in an algorithmic manner flaws in the material being tested. Decisions concerning the flaw which uses the computed impulse response as an experiments dealing with the impulse train recovery from on the basis of an idealized physical model, describing then be made on the basis of the nature and severity of Flaw size estimates are currently made Simulation acceptance rejection of material for further usage can interrelationship among parameters of deconvolution The desirable performance goal of an The research reported in this study seeks to define the limits and sensitivities of currently available deconvolution algorithms. In particular, with the aid of a laboratory minicomputer system. instrumentation related errors were studied procedures, noise, transducer bandwidth and flaws within it. ABSTRACT: i nont

DESCRIPTORS OU ONONDESTRUCTIVE TESTING, OULTRASONICS, SIGNAL PROCESSING, OPROCESSING, OPROCESSING, COMPUTERS, COMPUTERS, COMPUTER PROGRAMS, NOISE, SIMULATION, MOMENTUM, SUPPRESSORS, FRANK DUCERS, BANDWIDTH, ALGORITHMS

*DENTIFIERS U NOE MonDestructive Evaluation) Wiener

AD A172 587

AD-A172 687

AGE 143

OF A COLOR OF PROPERTY OF APPEAL CONTROL NO. EVNS48

MARYLAND UNIN COLLEGE FARE DEPT OF PHYSTAS AND ASTRONOMY

Ur Coherent Scattering of Light by Nuclear Spans

ENERGY CURRENT DENSITY ELEMENTARY PARTICLES, ELECTRONS
THIN FILMS, DIELECTRICS, CRYSTALS, SAPPHIRE, RESONANCE
ABSORPTION, ABSORPTION CROSS SECTIONS NUCLEAR MAGNETIC
RESONANCE, MOMENTUM TRANSFER, LASER BEAMS, NUMERICAL

METHODS AND PROCEDURES

(U) Raman scattering, Autineutrino PE61102F, WUAFOSR2301A8

IDENTIFIERS. Scattering.

POLARIZATION COUPLING INTERACTION . LOW

CONTINUED

AD A172 675

NUCLEAR SPINS

DESCRIPTIVE NOTE Final rept

πα N.

PERSONAL AUTHORS. Weber J

CONTRACT NO F49620-81-C-0024, AFDSR-82-0164

PROJECT NO 2201

TASK NO A

MONITOR - AFOSR TR-85-0908 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with California Univ. Irvine

is an absorption process described by the interaction This appears true for all tightly bound scatterer corresponding ones for scatterers which are not tightly conducting film on the surface of polarized dielectric; of light with magnetic moments. All of these processes and co Interaction of light with polarized nucles of a with each other is important. These are: a) Low energy antineutrinos interacting with nuclei of a solid; b) Raman scattering of light by electrons in a thin may have total cross sections orders greater than the with polarized spins. Three kinds of experiments have been carried out in which the coupling of scatterers described by the interaction of light with electrons, possible for strongly coupled scatterers. The general theory is presented and applied to the coherent absorption of light by an ensemble of coupled nuclei, A new kind of coherent interaction is For an the theory is the interaction of two antineutring scattering, b) is a scattering process current densities and the lowest order process is . U ABSTRACT crystal

DESCRIPTORS OF FLIGHT SCATTERING, COMERENT SCATTERING,

AD-A172 675

AD-A172 675

PAGE 150 EVN54B

SEARCH CONTROL NO EVN548 TIC REPORT BIBLIOGRAPHY

AD-A172 616
2/3
ND-A172 664

The Exchange Reaction of Tetramethyldipnictogens with Dimethyldichalcogenides,

MICHIGAN UNIV ANN ARBOR DEPT OF CHEMISTRY

PERSONAL AUTHORS

Ashe, Arthur J. , III ; Ludwig, Edward G.

AF0SR - 81-0099 CONTRACT NO

2303 PROJECT

82

TASK NO

MONITOR

AF0SR TR:85 0909

UNCLASSIFIED REPORT

of Organometallic in unl Chemistry, v308 p289-296 1986. Pub SUPPLEMENTARY NOTE:

These compounds have been characterized by NMR Se. Tel to produce the corresponding dimethylphictor methylchalcogenides Tetramethyldipnictogens Me4E2 (E = P Sb. Bir undergo exchange reactions with dimethyldichalcogenides MeA (A = S Se. Raman and mass spectroscopy. Me2EAMe

TELLURIUM MASS SPECTROSCOPY, REPRINTS U) *ORGANOMETALLIC COMPOUNDS, *METHYL CHALCOSENS, *EXCHANGE PEACTIONS, FHOSPHORUS SELENIUM ANTIMONY, BISMUTH, SULFUR, NUCLEAR MAGNETIC RESONANCE. DESCRIPTORS RADICALS ARSENIC.

Interelment compounds, WUAFOSR230382, _ ⊃ IDENTIFIERS

DUKE UNIV DURHAM NC

Numerical Evaluation of Performability and Job Completion Time in Repairable Fault-Tolerant Systems. Ĵ

86

G. : Nicola V. F. : Smith R Kulkarni, V. M. :Trivedi,K. S. PERSONAL AUTHORS:

DAAG29-84-K-0045, AFDSR-84-0140 CONTRACT NO.

21055 19-EL, TR-86-2202 ARO, AFOSR

MONITOR

UNCLASSIFIED REPORT

Pub. in IEEE Computer Society, p252-SUPPLEMENTARY NOTE:

acyclic Markov chains). This paper describes an algorithm unified model for the analysis of job (task) completion time and the accumulated service (reward) until a given time (also known as performability). In prior work, the their level of performance (e.g., mode of operation or Fault-tolerant computer systems change service rate! in response to different events such as evaluation of the distribution of performability was feasibility of failure, degradation or repair. The author present a performability or job completion time, in repairable for the numerical evaluation of the distributions of fault-tolerant systems (represented by cyclic Markov chains). This reprint demonstrates the feasibility o restricted to nonrepairable systems (represented by these techniques by means of numerical examples. ABSTRACT: (U)

SCRIPTORS: (U) +FAULT TOLERANT COMPUTING +NUMERICAL ANALYSIS. PERFORMANCE(ENGINEERING) ALGORITHMS MARKOV PROCESSES. RELIABILITY REPAIR MATHEMATICAL MODELS. MULTIPROCESSORS, REPRINTS DESCRIPTORS

EVN54B SEARCH CONTROL NO DITC PEPDRY BIGLIOGRAPHY

4 -AD-A172 607

12, 1 AD A172 562 KOZIN BOGDANOFF AND ASSOCIATES INC WEST LAFAYETTE IN

RESEARCA INST OF COLORADO FORT COLLINS

(U) A Survey of Probabilistic Methods for Dynamical Systems with Uncertain Parameters Mesoscale Severe Weather Development under Orographic Inf luences

Final rept 1 May 85-30 Apr 86 DESCRIPTIVE NOTE

Reiter, Elmar R., Bresch, James F. PERSONAL AUTHORS

: MacDonald, Bruce C. ; Sheaffer, John D.

F49620-85-C-0077 CONTRACT NO

Klitch, Marjorie A.

2310 PROJECT NO

2 TASK NO

AFOSR MONITOR

TR-86-0880

UNCLASSIFIED REPORT

PERSONAL AUTHORS: Bogdanoff, J L. ; Kozin, F. ;

DESCRIPTIVE NOTE: Final rept

170P

MAY 86

F49620-85-C-0139 CONTRACT NO.

2302 PROJECT NO.

<u>В</u> TASK NO. AFOSR MONITOR TR-86-0830

UNCLASSIFIED REPORT

blizzards lee cyclogenesis, etc. Four approaches were taken to attain these goals: 1:Implementation of a field measurement program, 2: diagnostic studies of energy fluxes during various seasons. 3: numerical simulation of Everall goals of this 3-year study are to: sensitivity of various physical processes. Progress has been made on all four of these fronts in the first year 1 examine the role of topography in the development of Keywords: Mountains, Almosphere models; Surface energy severe weather development, and 41 evaluation of model such as fluxes, Mesoscale numerical modeling. Atmospheric convective systems and 21 assess the orographic influences on cold season severe weather, convection, Seasonal variations. __ ⊃ ABSTRACT

SCRIPTORS (U) (CONVECTION ATMOSPHERIC), *MOUNTAINS, *STORMS, TOPOGRAPHY, COLD WEATHER, ATMOSPHERE MODELS, MATHEMATICAL MUDELS, ENERGY TRANSFER, METEOROLOGICAL DATA. SEASONAL VARIATIONS FIELD TESTS. DESCRIPTORS

IDENTIFIERS: (U) Blizzards, Lee cyclogenesis, Tibet, Mesoscale numerical modeling. Surface energy fluxes, Rockey Mountains Tibetan Plateau, Severe Weather, WUAF0SR2310A1 PES1102F

random parameters, and time varying parameter systems are discussed. The motivation is the study of structures with The purpose of this report is to present a response characteristics of linear dynamical systems. The report is directed towards the properties of the solutions of ordinary linear differential equations with random parameters. Both time independent (constant) survey of techniques that are available for studying the effect of raidom parameters on the response random parameters. Keywords: Stochastic process; Random vibrations; Structural response: Random parameters; characteristics of linear dynamical parameters on Uncertain systems; Perturbation; and White nose coefficients, (Author) ABSTRACT

DYNAMICS. LINEAR SYSTEMS. INEARITY, PARAMETERS, STRUCTURAL RESPONSE, SURVE'S, LINEAR DIFFERENTIAL EQUATIONS, LINEAR SYSTEMS, SOLUTIONS(GENERAL), VIBRATION, STOCHASTIC PROCESSES, METHODOLOGY, TIME *PROBABILITY, *PARAMETRIC ANALYSIS, DESCRIPTORS

WUAF0SR230281 PE61102F IDENTIFIERS: (U)

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SEARCH CONTROL NO. EVN548 DIIC REPORT BIBLIOGRAPHY

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EYE RESEARCH INST OF RETINA FOUNDATION BOSTON MA

Final Technical Report on Contract FQ8671-83-0517 for j

96

EFFECTS, GRADIENTS, SPATIAL DISTRIBUTION, GRADIENTS, SPATIAL DISTRIBUTION, SUBSURFACE, COLORS, CONTRAST, NONUNIFORM, REGIONS, STIMULI, REGIONS, PATTERNS, LINE

SIGHT, RETINA, IMAGES

IDENTIFIERS: (U)

CONTINUED

AD-A172 561

PEG1102F, WUAFUSR2313A5

1 February 1983 - 31 January 1986

Arend, Lawrence PERSONAL AUTHORS

FQ8671-83-0517 CONTRACT NO

PROJECT NO.

A5 TASK NO

TR 86 0845 AFOSR MONITOR

UNCLASSIFIED REPORT

staircases, with no brightness changes over the shallower luminance slope. Brightness measurements at corresponding points in different cycles of these patterns showed strictly subthreshold luminance gradients, but occur with slightly suprathreshold gradients as well. In models threshold operator. Lightness measurements indicated that these problems have a visual counterpart, further support for the models. Several new illusion were found to result visual system integrates over the thresholded gradient of perceived as uniform. Color constancy was measured for substantial illusory brightness differences. Other measurements showed that the illusion is not confined the stimulus distribution. The integration encounters including patterns where gradients were perceived in uniform regions and nonuniform stimulus regions were multiple regions of the visual field under different which attempt to explain these visual illusions the from this nonlinear threshold for spatial gradient, STRACT: (U) Low contrast, low spatial frequency luminance saxtooth patterns look like luminance problems due to curl introduced by the nonlinear Document partially illegible Availability

SCRIPTORS (1) EYE MOVEMENTS, (VISION, FILLUSIONS, 37 GATALES, MENSURENTE ILLUMINANTS, LUMINANCE, SLOPE, NANLINGAP, SKSTEMS, OPERATORS(PERSONNEL), THRESHOLD DESCRIPTORS 30 GOTHESS

AD-A172 551

AD-A172 561

SEARCH CONTROL NO EVN54B DITC REPORT BIRLINGRAPHY

13.8 1.1 AD A172 558 THOUSAND DAKS CA SOLENCE CENTER ROCKWELL INTERNATIONAL

modulus, which ranged between 1 and 5 GPa, increased with critical stress intensity factor ranged between 10 and 30

CONTINUED

AD-A172 558

density and was higher for the healed materials. The

within the cell struts and large regions fo missing cells included specimen to specimen density variations, cracks

in the material with the smallest cell size

*CERAMIC MATERIALS, POROUS MATERIALS

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DESCRIPTORS

kPam 1/2, increasing with elastic modulus. Tensile strength ranged from 0.1 to 0.8 MPa and appeared to be

related to processing variations and defects, which

FABRICATION, MECHANICAL PROPERTIES. LOW DENSITY CELLS. SIZES!DIMENSIONS), ALUMINUM OXIDES, ZIRCONIUM OXIDES. SLURRIES, CERAMIC COATINGS, POWDERS, STRUTS, CRACKS. EXPANDED PLASTICS, POLYURETHANE RESINS, SUBSTRATES, PYROLYSIS, MODULUS OF ELASTICITY, TENSILE STRENGTH.

Reticulated polymer substrates

Fracture toughness, PE61102F, WUAFOSR2303A3

IDENTIFIERS

TOUGHNESS

Macrostructures Fabricated from Reticulated Polymer Low Density Cenamics Based on Open Cell Substrates Ĵ

Final rept. 1 May 83-30 Apr 85 DESCRIPTIVE NOTE

JUN 86

Miller K L. Lange, F PERSONAL AUTHORS

SC5364 2FR REPORT NO.

F49620-83-C 0078 CONTRACT NO

2303 PROJECT NO

A3 TASK NO AFOSR MONITOR

TR - 25 0844

UNCLASSIFIED REPORT

half of the specimens were treated by the manufacturer in mechanical properties, of open cell low density irelative fabricated using reticulated polymer substrates with cell slurry coating reticulated polymer substrates. Cracks in during densification, leaving large regions within the macrostructure void of cell struts. This problem became between 7 and 12% of theoretical. Mechanical properties transformation toughened AL203/Zr02 doped cell material investigated. These macrostructures were fabricated by 65, and 100 pores per inch. Approximately slurry drainage during the coating process could fill cells with powder which would differentially shrink densification at high temperatures and were the major cause of suboptimum properties. Additionally, lack of density less that 0. 1: ceramic macrostructures were Mechanical properties were measured for a commercial an attempt to heal the partially cracked struts. The the powder coating, which were produced during the pyrolysis of the substrate, remained after powder. Processing procedures, and resulting relative density of all commercial materials ranged increasingly pronounced with decreasing cell size. Sizes of 30

AD-A172 558

The elastic

appeared to be independent of cell size.

AD- A172 558

EVN54B 154 PAGE

SEARCH CONTROL NO. EVN54B DITIC REPORT BIBLIOGRAPHY

20/11 11.2 AD-A172 549 NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL ENGINEERING

(U) Fracture Toughness of Fiber Reinforced Concrete

PEG1102F, WUAFDSR2307C2

IDENTIFIERS

CONTINUED

AD-A172 549

Final rept. Jun 82-Aug 85 DESCRIPTIVE NOTE:

386 85 > Q

Shah, Surendra P PERSONAL AUTHORS

AF05R 82 - 0243 CONTRACT NO

2307 PROJECT NO

3 TASK NO AFOSR MONITOR

TR 86-0898

UNCLASSIFIED REPORT

out load vs. Slip relationship of single fiber. The model was verified with the results of experiments conducted on the knowledge of matrix fracture properties and the pull-Mode I chack propagation and steel fibers are treated in the proposed model. The mechanism of fracture resistance for FRC can be separated as, subcritical crack growth in critical crad growth in matrix such that the net stress intensity factor due to the applied load and the fiber machine so as to maintain a constant rate of crack mouth researchers. Beams were loaded in a closed loop testing duning all these stages was successfully predicted from bridging closing stresses remain constant; and a final resistance of fiber reinforced cement based composites A fracture mechanics based theoretical matrix and beginning of fiber bridging effect; post model is presented to predict the crack propagation provided exclusively by fibers, the response of FRC stage where the resistance to chack separation is notched beams reported here as well as by other opening displacement ⇒

CRACKS · FIBER REINFORCEMENT, · REINFORCED TOUGHNESS, DISPLACEMENT, MOUTH, OPENING PROCESSI, C STRESSIR, STRESS CONCENTRATION SEPARATION, FIBERS, CONCRETE, CONSTANTS RATES, CRACK PROPAGATION, CRACKING/FRACTURING/, RESISTANCE BRIDGES, FIBERS, SUBCRIFICAL ASSEMBLIES, METAL FIRERS, STEEL . -DESCRIPTORS

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AD A172 549

EVN54

SEARCH CONTROL NO EVNS48 ARAVEBOALLIA LEGISTO ITO ESCRIPTORS OUR RAMUET ENGINES, SHOCK WAVES, FLATE HOLDERS COMPUTATIONS, FLOW VISUALIZATION OSCILLATION GLOBAL, ACQUSTIC FIELDS, UNSTEADY FLOW

CUNTINUED

AD A172 546

DESCRIPTORS

PEG1102F WUAFDSR2308A2

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IDENTIFIERS

2:2 14 AD A172 545 CALIFORNIA INST OF FECH PASABENA

Mechanisms of Exciting Pressure Oscillations on Ramyet Engines \supset

Final rept Aug 80-Sep 84 DESCRIPTIVE NOTE

8 13 Z Zukoskı, E. لبنة Marble F . !!! Cullick F PERSONAL AUTHORS

AF0SP 80-0265 CONTRACT NO

2308 PROJECT NO

7.2 TASK NO

TR 86 0840 AFRSR MONITOR

UNCLASSIFIED REPORT

the flameholder shear layers has many of the characteristics of isothermal shear layers. When unstable combustion occurs, the shear layers are characterized by nonlinear behavior. Good agreement has been found between Analytical studies pressure, spectral line intensity and flow visualization techniques in a burner equipped with a bluif body flameholder. When the combustion is stable, the flow in large vortices which are shed from the flame holder lip. have been carried out to determine the combustion augmentation for a flame distorted by a plane vortex, a flame distorted by a vortex being stretched along its investigations of combustion have been carried out with Both steady and calculations of the mode shapes and data taken at the The self excited oscillations appear to result from a coupling between the vortex production mechanism and Analytical work devoted to the global unsteady behavior of a normal shock wave in an inlet Naval Weapons Center. Numerical calculations are in progress to provide representation of the nonlinear acoustics has been concerned with both linear and diffuser, including viscous effects. Experimental axis and a burning vortex interacting with wall nonsteady heat addition in the vortex. nonsteady processes are being studied. ABSTRACT

AD-A172 546

EVN548 156 PAGE

SEARCH CONTROL NO. EVN548 DIEG REPORT BIBLIOGRAPHY

8.10 8/11 AD: A172 543

HAWAII INST OF GEOPHYSICS HONCLULU

Hydrophone Investigations of Earthquake and Explosion Generated High Frequency Seismic Phases

Final rept. Oct 83 Sep 85 DESCRIPTIVE NUTE

APR 86

Walker Daniel A PERSONAL AUTHORS

F49520 84-C 0003 CONTRACT NO

309 PROJECT NO

72 TASK NO

TR 85 0538 ALOSE MONITOR

UNCLASSIFIED REPORT

Original contains color plates: All DTIC and NIIS reproductions will be in black and white SUPPLEMENTARY NOTE.

1 comparative studies of explosion phases from earthquakes in the interior of the basin and along its subducting margins may also have associated gravitational effects of Air Force relevance. Finally, data from the Wake array may constine uling a partial resolution of the Data from the Wake Island Hydrophone Array the location of significant aarthquakes unreported by 3) estimates of democrean noise levels and in the interior has been used in studies related to the detection and discrimination of underground nuclear explosions. These determinations of the stability of yield estimates, and and along the subducting mangins of the Western Pacific * priaries from underground explosions in the sites at comparable epicentral distances in the highly efficient propagational distance range of 60 deg to 90 some preliminary estimares of detection level Pacific have led, in part, to the discovery of a new subduction zone—the Micronesian Trench Unreported of 9 April 1984 and in the Basin The unreported earthquakes in the southwest both the NEIS and ISC, but well recorded at great discrimination of underground nuclear explosions companisons to duret continental viles, (4) distances by elements of the Wake armay. provide and thresholds, 1 69+ odru 10 STLF 1811 inc lude ABSTRACT

CONTINUED AD-A172 543

Tuamotus Reywords: Body waves, Spectral analysis, Hydrophone recordings; Nuclear explosion detection, Marine seismology, Guided phases,

SCRIPTORS: (U) +SEISMIC WAVES, +NUCLEAR EXPLOSION DETECTION, +DISCRIMINATION, SPECTRUM ANALYSIS EARTHQUAKES, EPICENTERS, MARINE GEOPHYSICS, UNDERGROUND EXPLOSIONS, HYDROPHONES, DEEP OCEANS, PACIFIC OCEAN. PRIMARY WAVES (SEISMIC WAVES). HIGH FREQUENCY, PHASE GRAVITATIONAL FIELDS. OCEANIC CRUST, EARTH MANTLE. SEISMIC DATA, PACIFIC OCEAN ISLANDS, SUBMARINE FRENCHES MICRONESIA, AMBIENT NOISE DESCRIPTORS:

Marine sersmology, Subduction Zones, Body waves(Seismology), Wake Island hydrophone Array. Ocean basins, Western Pacific Ocean, PE51102F. Ĵ WUAFUSR2309A2 IDENTIFIERS

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LO DEBLE VELOS I BUINZO HERVISTE SEC CANHAGE UBLIND

of Fuel Addition Effects on Sooting Investigation

Fresh nept 1 May 83 34 May 86 DESCRIPTIVE NOTE

JUL 85

BONCZYK Paul A PERSONAL AUTHORS

UTRC R36 956545 F REPORT NO

F49520 83.C 0113 CONTRACT NO

PROJECT NO

7.2 TASK NO AFRISE MONITOR

TR 83 (851

UNCLASSIFIED REPORT

ferrocene in a flame fueled by a prevaporized toluene/iso to fest an often quoted hypothesis of soot suppression in Measurements were limited to well-defined number density and volume fraction to additive type and concentrations of metal combustion species, MOH+ (M = Ba critical to soot suppression. The data indicate additive the flame and to maximize in the direction of increasing presumed to enhance soot oxidation and removal. This was hydrocarbon are gaseous and prevaporized liquid-fueled experiment complementary to the foregoing was conducted diffusion flames. Emphasis was given to alkaline-earth as well as to octane mixture. Nonperturbing laser/optical diagnostic effectiveness was shown to vary from point to-point in techniques wore used to measure flame temperature, as Sn etc. were concluded to be the particular species which metal induced increases in OH concentration are formation, but it was not possible to conclude early well as to relate changes in soot particulate size, intervention at both early and late stages of soot flame temperature. From the latter, and measured intervention firmly for the alkaline-earths, an For the ethylene flame, additive salt additives in an ethylene/air flame. concentration

CONTINUED AU 4177 522

was observed to suppress a visible soot plume completely albalane earths on OH was to decrease the concentration of the latter radical at all points in the ethylene air preceding hypothesis for the toluene flame, ferrocene Mie scattering measurements at a late combustion stage demonstrated that suppression results almost entirely which fundamentally is not supportive of the from particular number density reduction. olite [+

SPECTRA, SUPPRESSION, DIFFUSION, FUELS, METALS. HYDROCARBONS, DIAGNOSIS(GENERAL), TEMPERATURE, OXIDATION *FLAMES, 'FUEL ADDITIVES, 'COMBUSTION DENSITY PARTICLE SIZE, TOLUENES, METHODOLOGY, OPTICS. LASERS, MIE SCATTERING, MEASUREMENT, REDUCTION, VISIBLE 'SOOT ADDITIVES INTERVENTION ETHYLENE TEMPERATURE ALKALINE EARTH METALS, SALTS, AIR, FERROCENES, CONCENTRATION/CHEMISTRY) TEMPERATURE MEASURING INSTRUMENTS, HYDROXYL RADICALS, HYPOTHESES, LIGUIDS ž DESCRIPTORS: LASERS, M SPECTRA,

(U) Liquid fuels, Soot suppression WUAFUSR2308A2 PE61102F IDENTIFIERS

not to be valid. The effect of the

AD A172 522

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DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVNS4B

WASHINGTON UNIV ST LOUIS MO BEHAVIOR RESEARCH LAB

TULL A Psychophysiological Mapping of Cognitive Processes

DESCRIPTIVE MOTE: Final rept 1 Mar 42 28 Feb 86

ACRE SE NULL

PERSONAL AUTORS - Stern John A . Goldstein Robert .

CONTRACT NO - 149620 33 C 0059

PROUPLY NO 31

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UNCLASSIFIED REPORT

To this end a modified Sternberg paradigm was attentional demands varied with set Size probe ERP Pi-Ni and and tony so as to assess the stimulus intermed the subject as to the character of the In studies 1 and 2, the cue simply In study 3, the cue ilso indicated the character type of the letters, either a d in the interval preceding the memory set, where The third on test, letter starting the equation of lettons in the memory set (13) used in which the trials were divided into three parts The purpose of these studies was to map rbas to the move stimuli and to lise innereseant probe how spinores of the beath in the introduction of verbal Wis a member of The third study and nonversal dapagese characters the sencity set. Thysiological recogness recorded were frglish or Johnnese, the latter posentially nonsense. probe 11 195 cycoled 1110 those of study 1. the psychopyralogical concomitants of cognitive or cue stimuli appointing in the interstitution inforvals." Studies filed 2 legant mate and piles parameters grammed the differences between left and right amplituda increased with set size. In study 2 each beginning with a stimulus. The first millod for a response as to whet a at specificity of the study 1 ERP Mittact in study to 2 on 6 in study pottern, for topse subjects stimuli were both aisual tollowing menory set Frial 15h @Mara, 40r Substationa t spina

AD A172 518 CONTINUED

amplitudes reflects not only the number, but also the type, of information processing resources demanded by a

primary task

DESCRIPTORS: (U) PSYCHOPHYSIOLOGY COGNITION, BRAIN, ENGLISH LANGUAGE, INFORMATION PROCESSING, RESOURCES, MEMORY DEVICES, AMPLITUDE, MAPPING, HEART RATE, JAPAN, PHYSIOLOGICAL EFFECTS, RESPONSE BIOLOGY), FROBES, STIMULI, HENTSPHERES, SIZES, DIMENSIONS: MEMORY PSYCHOLOGY: CULS: STIMULI), PERCEPTIEN PSYCHOLOGY: REACTION TIME, ATTENTION, PATTERN RECOGNITION PERFORMANCE (HUMAN), ELECTROENCEPHALGGRAPHY

IDENTIFIERS: (U) ERPIEven' Pelated Potentials) Evoked potentials Eve blinks Short term memory, WUAFOSR2313A4 PEG1102F

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TRAVERSING MECHANISMS MEASUREMENT MIXING MOTIVATION, PARTICULATES, COMBUSTION SPATIAL DISTRIBUTION VELOCITY

WUAFUSR2308A3 PE51102F

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IDENTIFIERS

DIAMETERS

TESTS ORDNANCE ROCKET ENGINES SHORT RANGE TIME.

CONTINCE

AD A172 517

valocity Massucement by Pulsed Doppler

Sep 64 Sep 85 final rept DESCRIPTIVE NOT

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Swithenbank Ewan Bruce C PERSONAL AUTHORS

41C 448 REPORT NO

AF05R 84 0374

CONTRACT NO

2308 PROJECT NO

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TP 26.0339 AFOSP MONITOR

UNCLASSIFIED REPORT

finings, which typically last for only a few seconds, but into the latter category and it is clear that in order to particulates has in a the past generally divided between those methods which provides a single snapshot over a dependent 3 D flow measurement. This letter is now known The optical monitoring of fluid flows and wide field diameter and those which provide a continuous record at a single point. Laser Doppler anemometry comes short between tests—single firings or periodic systems. traversing of the field must be carried out. While this is commonplace among users of LDA, it requires that the capability of LDA in certain cases of interest to USAF are now considered to include the growing area of time The motivation behind the present program has stemmed velocity field be steady or at least reproducible in to be at the heart of many simple combustion systems from the perceived need to overcome the single point These were originally seen to be short rocket motor ď distribution of velocity as wide field methods accumulate the same information on the spatial \supset ABSTRACT

FELUID FLOW, FLASER ANEMOMETERS DOPPLER SYSTEMS MONITORING, OPTICS FIRING DESCRIPTORS

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involving lange scale mixing

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PAGE

EVN54B SEARCH CONTROL NO. OTIC REPORT BIBLIOGRAPHY

20/11 133 AD-A172 507

COLORADO UNIV AT BOULDER DEPT OF CIVIL ENVIRONMENTAL AND ARCHITECTUPAL ENGINEERING

(U) Finite Elements and Localized Failure

Final technical rest 1 Aug 82- 31 Oct DESCRIPTIVE NOTE:

S DEC

Starn Stern Willam, Kaspar d PERSONAL AUTHOPS

AF0SR 82 0273 CONTRACT NO

PROL'ECT NO

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TR 36 0348 AFOGR MONTENDA

UNICLASSIFIED REPORT

form of the Composite Monogenization of localized in thre cure to tensile strength wifting an elegentary volude of a fracture energy This project was comprised of research on 2) Constitutive erigility: anisotropy three different levals it Experimental Work. Stroke localized failure within solids employed to tensile controlled post pask experiments on plain concrete Trightaction of Stabilization of strain softening computations of speciment which wern subjected to direct tension. consting and or shear faulting. Foy-ords, strain softening conserete components, cognitive anisot equivalent continuum and 3. Commititional Worktriversal compression and direct shore oreguland foliational slip in the fracturé Model which describes the experimental data ABSTPACT 1...3

FINITE ELEMENT ANALYSIS FRAGILITY SOLIDS COMPRESSION. COMPOSITE STRIVITIONS FRACTURE MICHANICS MODELS, PARTS. CONCRETE, STENSILE COMPUTATIONS DEGRADATION, STRINGTH GENERAL), TENSION, EYPERIMENTAL DATA ANISOTROPY COMPPESSIVE PROPERTIES. SOFTENIAL ENLOCK CBLCKS PROPERTIES 5**a**01d1a0530 .3M : 107

36013 1111 441.7C F2302.12

13/13 AD- A172 482 COLORADO UNIV AT BOULDER DEPT OF CIVIL ENVIRONMENTAL AND ARCHITECTURAL ENGINEERING

Centrifugal and Analytical Modeling of Flexible Culvert. Technical rept. 1 Sep 84-31 Aug DESCRIPTIVE NOTE:

244P 85

Ni Jim C PERSONAL AUTHORS

AF GSR - 84 - 0300 CONTRACT NO.

2302 PROJECT NO

 c_{5} TASK NO

TR-86-0850 AFOSR MONITOR

UNCLASSIFIED REPORT

induced overburden pressure effects that dictate the soil phenomena. Scaled model testing in the centrifuge is used plastic model. On the basis of comparison with centrifuge the centrifuge makes it possible to simulate the gravity experiments were analyzed by a finite element program in test data, the suitability and accuracy of the different Testing in deflections and strains measured around the pipe. These in the project to validate an Tytical methods commonly This report summarizes one phase of the obtained by testing a 4-in commission pipe at 50 g under a which different constitutive mode)s were incorporated. stiffness which in turn determine the soil structure used to analyze soil structure interaction problems. including a non-linear plastic model and an elastostatic surface pressure loading consist of radial research on the modeling of buried structures by centrifuge testing and by numerical methods. analyses were assessed. $\overline{\Box}$ ABSTRACT

*STRUCTURAL RESPONSE MATHEMATICAL MODELS, NONLINEAR SOILS, STIFFNESS, CHANNELS WATERWAYS) MODELS, PLASTIC PROPERTIES, DEFLECTION CENTRIFUGES, TEST METHODS, CINITE ELEMENT ANALYSIS, (U) *CONDUITS, *PIPES, *STRUCTURAL R CENTRIFUGAL FIELDS MATHEMATICAL MODELS, ELASTIC PROPERTIES. SYSTEMS, PRESSURE, EXPERIMENTAL DATA. DESCRIP CORS ACCURACY

AD-A172 482

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7 AD A172 474 SRI INTERNATIONAL MENLO PARY CA

INTERACTIONS FLEXIBLE STATICTURES GRAVEDY BACKFILLS STATIC LOADS SIZETY PRESSURE SUBFAME PROPRETES THESES SOIL MECHANIFIS

Culverts PEGI102F

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IDENTIFIERS

(ii) High-Latitude Ionospheric Irregularities.

Final rept 1 Mar 83-30 May 86 DESCRIPTIVE NOTE:

99 JUL 85 PERSONAL AUTHORS: Vickrey, James F.

F49620-83-K-0025 CONTRACT NO

AF0SR TR-86-0853 MONITOR

UNCLASSIFIED REPORT

involving the production, transport, and ultimate decay of naturally occurring ionospheric plasma structure Keywords: Scintillation; Plasma structure; and Highlatitude ionsophere A brief summary of some of key results ĵ AESTRACT:

DESCRIPTORS: (U) *PLASMAS(PHYSICS), *IONOSPHERIC SCINTILLATIONS, IONOSPHERE, STRUCTURAL PROPERTIES. HIGH LATITUDES. DECAY SCHEMES, RADAR REFLECTIONS

Harang Discontinuity, LPN-SRI-5741 Ĵ IDENTIFIERS

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A172 470 21 5 20.13

MINNESOTA UNIV MINNEAPOLIS HEAT TRANSFER LAB

(U) Studies of Gas Turbine Heat Transfer: Airfoil Surface and End Will.

DESCRIPTIVE NOTE: Annual progress rept 3 Jan 85-28 Feb

APR 85 74

PERSONAL AUTHORS ECKENT.E. R. Goldstein R. J. Simon, T

CONTRACT ND 719520 85-0 0049

PROJECT NO 2007

TASK NO A1

MCNITOR AFRSP TR 46 0854 UNCLASSIFIED REFORT

SSTRACT II The annual report documents progress at the University of Miropsota Heat Trynsfer Jaboratory on the thoic of neat transfer from gas turbine airfoil and end vill surface. Subtobics are Constune effects, End Curville neaster and Near and wall transfer Curville Construction (unbuilled transfer transfer power and transfer transfer construction). In the shown for a subdiction will be strongle of the residence of the power for the power context of the passage context transfer.

CESCRIPTONS - AIPPOILS, FGA CHAPKS THEAT TRANSPER TRANSPER TO PRINCES, WATER TOTAINS CURVATURE CONTINE SOLITE FRANSPER CONTINEISTER FIRM CONTINE CASCADE STRUCTURES

IDENTIFIERS & Fod will hear Practice WUAFOSR2307A1. PS611027

AD-A172 433 7/3

ATHENS

GEORGIA UNIV

U) Reaction of 1,2,3-Triphenyl-1,2,3-triphosphaindan with Nonacarbonyldiiron and Dodecacarbonyltriiron Revisted. Structures of Three P3Fe3 Clusters.

DESCRIPTIVE NOTE: Journal article,

6

PERSONAL AUTHORS· Kyba Even P. : Hassett Karen L. ; Sheikh, Baharuddin : McKennis, Jeffrey S. : King.R. B. :

CONTRACT NO. AFOSR-84-0050

PROJECT NO. 2303

TASK NO. B2

MUNITOR: AFOSR

TR-86-0762

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Organometallics, v4 nS p994-

ABSTRACT: (U) The reaction of 1, 2, 3-

triphenyltriphosphaindan with ronacirbonyldiiron or dodecacarbonyltriiron occurs ripidly in benzene at reflux to give a mixture of at least five components as monitored by HPLC. In addition to -1, 2. FHENYLENEBISEPHOSPHIDDE hexacirbonyldiiron and octacarbonyl 1,2,3-tiphenyl 1,2,3-triphosphaindan k. Superscript P. K. Superscript P. A. difference feature isolated and their structures determined by X. hay crystallography, two of which were P3Fe3 clusters and the other, a P3Fe3 cluster precursor. Feyvords Iron, Phosphines, and Metal carbonyls.

DESCRIPTURS (U) CHEMICAL REACTIONS, PHOSPHINE, ORGANOMETALLIC COMPOUNDS, PMETAL CARBONYLS, BENZENE CRYSTALLOGRAPHY, X RAYS, IRON, CLUSTERING, REPPINIS

IDENTIFIERS (U) WUAFOSR230382, PE61102F

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SEARCH CONTROL NO EVN548 THE REPORT RIBLINGRAPHY

21.4 AD A172 429

NU DEPT OF MECHANICAL AND AFFOSPASE PRINCETON CNIE ENGINEERING

(U) Fuels Combustion Research

Final rept. 1 Mar 82-30 Sep 85 DESCRIPTIVE NOTE

8 DEC Glassman Irvin Dryer Frederick L. Williams Forman A PERSONAL AUTHORS

MAE 1731 REPORT NO

F49620-82-K-0011 CONTRACT NO

2308 PROJECT NO

A22 TASK NO AFOSR MONITOR

TR 86-0841

UNCLASSIFIED REPORT

pyrolysis studies, it is now possible to predict a fuel's premixed combustion conditions has been developed and the reveal no synergistic trends with diffusion flame sooting slurry droplet during liquid vaporization and combustion determining the critical sooting equivalence ratio was put forth and substantiated by results on pure fuels and slurry propellants are reported. Transient internal heat A fundamental correlation with respect to fuel have been found to be the important controlling factors oxidation of benzene and alkylated benzenes corresponds well with flow reactor results. Major results have been fuel mixtures. Fuel structure and pyrolysis mechanisms in sooting diffusion flames. From a knowledge of basic structural aspects of these flames. Experimental and concept that fuel structure plays no direct role in conduction and liquid surface regression of a rigid theoretical research efforts on high-energy-density have been investigated using singular perturbation The qualitative mechanisms for the obtained on how the aromatic sidechain reacts and specific fundamental reaction rate data have been C-C bonds for the sooting tendency of fuels under these trends may be due to the trends: however obtained ABSTRACT

CONTINUED AD A172 429

methods. Experimentally, a technique to produce isolated slurry fuel droplets of boron and JP-10 has been developed, and observations on the isolated droplet combustion characteristics of several commercially prepared boron/JP-10 slurries were made

ISOLATION LIQUIDS MIXING RIGIDITY PATTERNS SYNERGISM PATTERNS SURFACES OXIDATION PURITY RATES REACTION TIME PERTURBATIONS INTERNAL THERMAL CONDUCTIVITY TRANSIENTS AROMATIC COMPOUNDS REACTION KINETICS. JET VAPORIZATION ALKYL RADICALS. BENZENE. BORON DIFFUSION FLAMES, FUELS. MIXTURES, HIGH ENERGY. PROPELLANTS. SLURRIES. PYROLYSIS. STRUCTURAL PROPERTIES. DROPS. *COMBUSTION, *SLURRY FUELS, ĵ ENGINE FUELS DESCRIPTORS

oxidation, Fuel pyrolysis, Alkylated benzenes, Boron fuels, Up-10 fuel, PE61102, WUAFUSR2308A2 Slurry propellants, Aromatic fuel IDENTIFIERS (U)

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SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOGRAPHY

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SRI INTEPNATIONAL MENLO PARK CA

Surface Generation of Electronically Excited States of

Final scientific rept DESCRIPTIVE NOTE

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Slanger, Tom G PERSONAL AUTHORS

3PI-MP 86 130 REPORT NO

749620 82-K-0025 CONTRACT NG

2203 PROJECT NO

72 TASK NO

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UNCLASSIFIED REPORT

the production and loss of electronically excited oxygen species or metallic surfaces, and at investigation of the mechanisms that might contribute to the so-called Space. composition, and the electronic host capacity. Spectra of Shuttin gion In the laboratory were production by atom Pecomplication of the states of 02 that he between 4 and 5 etwas studied. The efficiency of their generation was correlated with the identity of the metal lits position. internal energy distributions in the emitting metastable ing parsions originating at the surfaces were shown to be non-specific to the particular social, implying that ISTRACT II This investigation of surface-related processes consisted of two parts. Imbonatory studies of surfaces was investigated, and showed both similarities statos on the same surfaces. Metals in a given group of Further study of surface energy accummodation, and the the periodic chart tend to exhibit similar temperature effort involved diretorment of a model for the process, which has been and differences with the production of the higher 02 possible generation of highly Vibrationally excited molecules is called for. The loss of 02 on metallic molecules were determined by gas phase interactions. on the periodic chart, surface temperatures, alloy

CONTINUED AD-A172 426

situ experiments have been carried out. By consideration of the present status of the observations, it has been useful in guiding the investigations as subsequent in explanations of the glow-forming mechanism are viable and which must be discarded. found possible to clarify which of the current

SCRIPTORS (U) **SURFACE REACTIONS, **ELECTRONIC STATES.OXYGEN, ATOMS, EMISSION, METASTABLE STATE, MOLECULES, DISTRIBUTION, ENERGY, INTERNAL, LABORATORY PROCEDURES, SPECIFIC HEAT, EXCITATION, INTERACTIONS, VAPOR PHASES, LABORATORY TESTS, METALS, SURFACES, SPACE SHUTTLES, GLOWDISCHARGES, MOLECULAR VIBRATION, EMISSION SPECTRA. SURFACE TEMPERATURE, ALLOYS RECOMBINATION REACTIONS, PRODUCTION, TEMPERATURE DESCRIPTORS

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AD A172 425

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SEARCH CONTROL NO EVNS48 DITC PERSHI BIBLINGRAPHY

2 AD A172 348 TEXAS UNIV AT CUSTIN DEPT OF CHEMISTRY

Ground States of Molecules, 64 PMDO Calculations for Compounds Containing Browing . 11.

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Healy Eamonn Dewar Michael J. PERSONAL AUTHORS

F49620 82-C-0024 CONTRACT NO

2303 PROJECT NU

82 TASK NO

TR 86 0712 AFUSR MONITOR

UNCLASSIFIED REP'

of Computational in Jnl JPPLEMENTARY NOTE Pub in Jn Chemistry, v4 n4 p542-551 1983 SUPPLEMENTARY NOTE

Since diatomic orbitals (AOS) are lot included, the calculations are restricted to Br superscript I. Heats of formation, molecular geometries, iunization energies, and MNDO has been parametrized for bromine dipole moments are reproduced with useful accuracy. ABSTRACT : U .

SCRIPTORS: U) GROUND STATE, 'JANTUM CHEMISTRY, BROMINE, ACCURACY, ATOMIC ORBITALS, MOLECULES, GEOMETRY, MOLECULAR PROPERTIES, DIPOLE MOMEN S, ENERGY, IONIZATION, HEAT OF FERMATION, IONIZATION POTENTIALS, REPRINTS DESCRIPTORS

PE61102F, WUAF0SR2303B2 IDENTIFIERS

7/3 AD A172 397 CINCINNATI UNIV OH DEPT OF CHEMISTRY

of the Aromatic Heterocyclic Poly(5,5'-Bibenzoxazole-2,2 -Diyl-1,4,-Phenylene) and Poly(2,5-Benzoxazole), Molecular Orbital Conformational Energy Calculations

69 3 3 w Welsh, W. J. , Mark, J. PERSONAL AUTHORS:

AF0SR-83-0027 CONTRACT NO.

2303 PROJECT NO

A3 TASK NO AFOSR MONITOR

TR-86-0706

UNCLASSIFIED REPORT

Pub. in Polymer Engineering and Science, v25 n15 p965-967 Oct 85 SUPPLEMENTARY NOTE

structurally analogous PBO. They are also consistent with the rodlike poly(p-phenylene benzobisoxazoles) (PBO) and been extended to a related group of polymers referred to as AAPBO. ABPBO. AAPBT. In this study. geometry optimized CNDO/2 molecular orbital calculations have been carried out on AAPBO and ABPBO model compounds SSTRACT: (U) Interest in potential high-performance polymers, leading to characterization and development of benzoxazole group and p-phenylene group prefers the coplanar conformation with a barrier to free rotation of away from coplanarity with a barrier to coplanarity and to free rotation of 3.6 kcal/mol. For ABPBO. which groups prefers a conformation approximately 60 degrees the coplanar conformations were preferred with a barrier to free rotation of 1.6 kcal/mol. These poly(p-phenylene benzobisthiazoles) (PBT) has recently results are in excellent agreement with the results of rotatable bonds per repeat unit, the bond between the rotation about each type of rotatable bond within the to determine conformational energies as a function of 2.1 kcal/mol, while the bond between the benzoxazole repeat units. For AAPBO, which contains two types of contains only the former type of rotatable bond per both theoretical and experimental studies on the repeat unit ABSTRACT:

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AD-A172 397 CONTINUED

the liquid crystalline behavior found for ABPBO but not for AAPBO - Reprints:

DESCRIPTORS (U) (RENZOXAZOLES, (LIDUID CRYSTALS, MOLECULAR OPRITALS, BONDED JOINTS, G.MBUTATIONS, AROMATIC COMPOUNDS, CONFORMITY, ENERGY, FUNCTIONS, PERFORMANCE FINGINERING, PLANAR STRUCTURES FOLYMERS, REPRINTS POTATION HETEROCYCLIC COMPOUNDS

IDENTIFIERS (U) CNDO/2 Molecular Debitals Grenvleness Benzokazole Poly/2.5 Phenylene Poly/55 Bibenzokazole 2 Diyl 1-4, PE61102F, WUAFOSR2303A1

AD-A172 396 20/12 7/4

CINCINNATI UNIV OH DEPT OF CHEMISTRY

U) A Theoretical Study of Conformations and Electronic Band Structures for Two Benzoxazole Polymers.

85 9P

PERSONAL AUTHORS: Nayak, Kasinath ; Mark, James E.

CONTRACT NO AFJSR 83: 0027

PROJECT NO. 2303

MONITOR AFOSR

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TASK NO

TOR: AFOSR TR-86-0700 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Makromolekulare Chemie. v186 p2153-2159 1985.

ABSTRACT: (U) The extended Huckel method within the tight bonding approximation was applied to two benzoxazole polymers of a type much studied because of their excellent mechanical properties. Specifically, band structure calculations were carried out in part to identify the most stable conformation of the polymers in the crystalline stable conformation of the polymers in the crystalline state. In the preferred conformation of one polymer the rotational angle between the bibenzoxazole groups is 20 dngs, and that between the bibenzoxazole group and the prohenylene group is 0 degs. The other polymer consists simply of benzoxazole groups, and these are predicted to be coplanar. The above conformational predicted to be coplanar. The above with the results of both experimental and theoretical studies on relevant model compounds. In addition, the band gaps in the axial direction were found to be 1.86 and 2.31 e/v. respectively, and these values are close to the corresponding experimental values 1,4 to 1,8 eV reported for trans-polyacetylene. In both benzoxazole polymers the band gap was found to increase with increase in nonplanarity due to the concomitant reduction in charge delocalization.

DESCRIPTORS (U) FLECTRONIC STATES, FNERGY BANDS + BENZOXAZOLES, FPOLYMERS, STABILITY, ENERGY GAFS

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CRYSTALS MECHANICAL PROPERTIES, ANGLES ROTATION THEORY CONFORMITY, BAND THEORY OF SOLIDS SEMICONDUCTORS POLYPHENYLENES PEPRINTS

IDENTIFIERS () PEG1102F WUAFOSR2303A3

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JOINT INST FOR LAB ASTROPHYSICS BOULDER CO

Up Branching Ratios for Electronically Excited Oxygen Atoms Formed in the Reaction of N+ with 02 at 300K.

86 11P

PERSONAL AUTHORS: Langford.Andrew O. ;Bierbaum.Veronica M.;Leone.Stephen R.

CONTRACT NO. F49620-83-C-0013

PROJECT NO. 2303

TASK NO. B1

MONITOR: AFOSR TR-86-0742

UNCLASSIFIED REPORT

SUPPLEMENTAR? NOTE: Pub. in Uni. of Chemical Physics, v84 n4 p2158-2166, 15 Feb 86.

Disuperscript 10) emission at 557.7 nm. The Oisuperscript observations is presented. Keywords: Electron excitation; intensities from the reaction of Arisuperscript 3P) with sigma g +) emission intensities from the title reaction. 760 nm from O2(1 sigma g +) formed by energy transfer from O(superscript 1D) to O2(X superscript 3 sigma g-). Absolute O(superscript 1D) and O(superscript 1S) yields Absolute branching ratios for production 1D) product is monitored via sensitized fluorescence at atomic oxygen product are inferred by comparison to the of 70 + or - 30% and <0.1%, respectively, of the total A qualitative reaction mechanism consistent with these of O(superscript 3P). O(superscript 1D), and O(superscript 1S) in the reaction of N(+) with 02 are directly from the relative O(superscript 1S) and 02(1 known O(superscript 18) and 02(1 sigma g +) emission 02. The low O(superscript 1S) yield is also obtained chemiluminescence technique. The O(superscript 1S) product is monitored by the O(superscript 1S)measured using the flowing afterglow/visible Ion-molecule reaction; and Flowing afterglow ABSTRACT: (U)

DESCRIPTORS: (U' *OXYGEN, *AFTERGLOWS,
+CHEMILUMINESCENCE, *NITROGEN, *AIRGLOW, ELECTRONS, ATP' ,

AD-A172 395

DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

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AD : A172 394 12/1 9/2

EXCITATION, RATIOS, ENERGY TRANSFER, IONS, MOLECULES, RESPONSE FLUORESCENCE, EMISSION SPECIFIA, REPRINTS

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IDENTIFIERS

CLEMSON UNIV SC DEPT OF MATHEMATICAL SCIENCES

(U) Iterative Algorithms for Generating Minimal Cutsets in Directed Graphs.

86 16P

PERSONAL AUTHORS: Shier, D. R. ; Whited, D. E.

CONTRACT NO. AFOSR-84-0154

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFUSR TR-86-0780

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Networks, v16 p133-147 1986.

ABSTRACT: (U) Several approaches for evaluating network reliability require the generation of all minimal cutsets in a directed graph. A general iterative algorithm, based on an underlying algebraic structure, is proposed for generating all minimal s-j cutsets simultaneously for all vertices j in such a graph. In order to implement this algorithm in an efficient manner and to exploit sparsity present in the graph, a number of computational simplifications are developed leading to improved performance of the algorithm. Empirical results show that the choice of certain data structures can have a profound effect on the computational effort required. (Reprints)

DESCRIPTORS: (U) 'GRAPHS, COMPUTER PROGRAMMING, ALGEBRA, ALGORITHMS, DATA BASES, ITERATIONS, NETWORKS, RELIABILITY, REPRINTS, STRUCTURAL PROPERTIES, OPTIMIZATION

IDENTIFIERS: (U) PEB1102F, WUAFUSR2304A5

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TOTAL CELL OF FLESTBICAL AND COMPUTER ENGINEEPING TEXAS UNI

(U) A Stability Engenty of Conditional Expectations

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WISE GARY L Morrison John M PERSONAL AUTHORS

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TR 86 0792 AFOSP MONITOR

UNCLASSIFIED REPORT

Conference on Information Sciences and Systems (1985) Held in Baltimore, MD on 27-29 Mar 85, p226-229. Pub in the Proceedings of the SUPPLEMENTARY NOTE

general fidelity criteria than mean square error are also This paper is concerned with approximating by a conditional expectation of the random variable given variable given a random process defined over an interval distorted values of the random process at finitely many considered and the above situation is addressed for a A sufficient condition which guarantees a good wide class of fidelity criteria. Reywords. Nonlinear a conditional expectation of a second order random approximation is presented. Best estimates of more = estimation SCRIPTORS OF FRANDOM VARIABLES, DISTORTION, VALUE, ERPORS, MEAN STABILLITY, GUARANFEES, ESTIMATES, NONLINEAR ANALYSIS, APPROXIMATION MATHEMATICS (DESCRIPTORS

PEB1102F WUNFUSR2304A5 ---IDENTIFIERS

AD A172 391

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

A Simple Inexpensive Computer Controlled Slew-Scan Atomic Fluorescence Flame Spectrometer for Multi-Element Determinations

14P 85 Davis, Lori A. ; Krupa, R. J. ; Winefordner PERSONAL AUTHORS: ے ت

F49620-84-C-0002 CONTRACT NO.

2303 PROJECT NO.

4 TASK NO AFOSR MONITOR

TR-86-0760

UNCLASSIFIED REPORT

Pub. in Analytica Chimica Acta, v173 SUPPLEMENTARY NOTE: p51-62 1985

wavelength control, a photomultiplier detector, and a photon counter with an Apple ${\rm II}^+$ for data collection and statistical treatment. The computer-controlled system is quantitative results (within + or - 5%) for each element The system consists of a continuum xenon number of elements in NBS standard reference materials at a selected wavelength were obtained in about 5 min. The system was characterized by determining 10 and 14 shown to give semi-quantitative results (within + or 50%) for 19 elements at two wavelengths each (one arc lamp source, a chopper, and argon-separated air, acetylene flame atomizer, a high-throughput, mediumelements in syrthetic mixtures and by determining a resolution grating monochromator under Apple II+ wavelength for 7 elements) in less than 15 min; (orchard leaves and two steels). ABSTRACT: (U)

SCRIPTORS: (U) *SPECTROMETERS, *ATOMIC SPECTROSCOPY, *COMPUTER APPLICATIONS, FREQUENCY, FLUORESCENCE, MATERIALS, DATA ACQUISITION, STEEL, DETECTORS, PHOTOMULTIPLIER TUBES, MIXTURES, SYNTHETIC MATERIALS, XENON LAMPS, ARC LAMPS, CHEMICAL ELEMENTS, REPRINTS OESCRIPTORS:

AD A172 343

DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD A172 391 CONTINUED

AD-A172 390 7/3

IDENTIFIERS (U) PEB1102F, WUAFDSR2303A1

GEORGIA UNIV ATHENS

(U) Metal Carbonyl Complexes of Bis(Diisopropylamino)-Phosphine and Diisopropylaminochlorophosphine.

DESCRIPTIVE NOTE: Journal article,

4

PERSONAL AUTHORS: King.R. B. ; Fu, W. K.

CONTRACT NO. AFOSR-84 0050

PROJECT NO. 2303

TASK NO. 82

MONITOR. AFOSR TR-86-0757

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Organometallic Chemistry, v272 pC33-C35 1984. ABSTRACT: (U) Reactions of (i)-Pr2N)2PH with the tetrahydrofuran (THF) metal carbonyl complexes (THF)M(CO) S (M°Cr, Mo, and W), (THF)Fe(CO)4, and (THF)Mn(CO)2C5H5 give () Pr2N)2PHM(CO)5 (M°Cr, Mo, and W) (i)-Pr2, ODE Of the disopropylamino groups in these complexes can be selectively cleaved with hydrogen chloride to give the complexes of Pr2NP-HHCIPE(CO)4 containing the unknown phosphorus compound i-Pr2NP(H)C)4 as a ligand.

DESCRIPTORS (U) PHOSPHINE CHEMICAL REACTIONS PETAL CARBONYLS HYDROGEN CHLORIDE FURANS HYDROXYL RADICALS METAL COMPLEXES, ORGANOMETALLIC COMPOUNDS, IRON, CHROMIUM MOLYBDENUM, TUNGSTEN, REPRINTS

IDENTIFIERS: (U) PE61102F, WUAFOSR2303B2

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ċ Polyfuretional Bis groun 14: Substituted Cycloperitations via a Novel Cleavige Principol Silicon Cirper Bonds by Chloride Ion 6 Spiciolis tu Silveria

Ur Jones Paul R Rozell dames M PERSONAL AUTHORS

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√4 p2206 in Organometallics 500 SUPPLEMENTARY MOTE 2210 1935

. Si or Ge, X with Me2MC12 - M - Si or Ge: In hexane the reaction gives the trimethylsilyl group occurs to give excellent yields of 1 (M and M - 3) or Ge, X and Y - Clo, Methanolysis reaction occurs only in THE and when the substrate bears 2-47 Group 14 substituted cyclopentadienes or can be prepared in good yields by cyclopentadieneyltrinethylsilane followed by treatment excess Me2MC12 lithium chloride catalyzed cleavage of 1 Stor Ge X = Y = OMe The cleavage In THE a chlorodimethylsilyl or -germyl substituent M MP2Y: 1 'M and or M Stor Ge X - Me, Y = CI. the reaction of n buty! Tithium with and or Y - Clor Me ISTRACT UP Group the type CSHS MMR2X gives 1 M - M 57 ABSTRACT

DESCRIPTORS OF SYNTHESIS: CHEMISTRY OPENTADIENES OPPLYMERS CYCLIC COMPOUNDS CHEMICAL BONDS CATALYSIS LITHIUM SILANES CHURIDES IONS CLEAVAGE RESPONSE HEXANES, CARBON, SILICON LITHIUM CHLOPIDE

PE61102F WJAF0SR230382 = **TOENTIFIERS**

DEPT OF MATHEMATICS TUCSON APIZONA UNIV Lifetime Distribution of Consecutive R out of in F Systems with Exchangeable Lifetimes

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Shanthikumar, J. PERSONAL AUTHORS

AF0SR 84-0205 CUNTRACT NO

PROJECT NO

A5 TASE NO

TR-86-0709 AFOSR MONITOR

UNCLASSIFIED REPORT

in IEEE Transactions on Reliability vR-34 n5 p480-483 Dec 85 Pub. SUPPLEMENTARY NUTE:

STRACT: (U) Algorithms for computing the lifetime distributions of consecutive-k-out-of-n: F systems with statistically independent, and statistically exchangeable component lifetimes are presented. A load-sharing model for statistically exchangeable component lifetimes and the effects of minimal repair on system lifetime are consider 3. (Author) ABSTRACT: (U)

ESCRIPTORS: (U) *ALGORITHMS, *LIFE EXPECTANCY/SERVICE LIFE:, *PARTS, *RELIABILITY, FAILURE, SYSTEMS ENGINEERING LIFE SPAN:BIOLOGY), PROBABILITY, PERFORMANCE/ENGINFERING: DESCRIPTORS (U)

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SEARCH CONTROL NO. EVN54B DILL REPORT BIBLIOGRAPHY

DEPI OF CHEMISTRY ATHENS GEORGIA UNIV

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AD-A1/2 363

DEPT OF CHEMISTRY COLUMBIA UNIO APP YORK Picoserria Lasem Studies on the Effect of Structure and En. comment on Intersystem Ore sing an Aromatic

Tetrakis:dialkylamino/Cyclotetraphosphines and Bis/dialkylamino/Dihalobiphosphines Ď

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, Sadanani, Narayan D PERSONAL AUTHORS: King.R B.

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in The Jnl. of Organic Chemistry Pub V50 n10 p1719-1722 1985 SUPPLEMENTARY NOTE:

The steric bulk of the discoropylamino groups in sisPr2N dehalogerating agent (Me3S). Mg in hydrocarbon solvents corresponding biphosphenes (i Pr2N)2P2X2 (X = C) and Br1 cyclotetraphosphines react eith these reagents. However Dehalogenation of R2NPCI2 (R =) sopropy) smaller than dissopropylamine (ead to redistribution of or cyclohexyll with magnesium in tetrahydrofuran gives Timited quantities of magnesium. Dehalogenations with magnesium of P2NPC12 derivatives having R2N groups can be isolated from reactions of i-Pr2NPX2 with more the dialkylamino groups giving (R2N·2P P·NR2)2 (R2N - piperidine) or (R2N·3P (R2N diethylamino or dimethylamino) such redistribution reactions can be suppressed but not eliminate by using the homogenous toward onygen, carbon disulfide, potassium metal, and 4P4 reduces its chemical reactivity relative to other cyclotetriphosphines; this Hi-Pr2N:4P4 is unreactive verious metal carbonyls E.G., Cricol6, Moicol6, and the P4 ring in (1.Pr2N)4P4 is cleaved under mild the corresponding cyclotetraphophines (R2N-4P4) fe2(CQ)9 under conditions where other ABSTRACT

*PHOSPHINE *SYNTHESIS CHEMISTRY DESCRIPTORS

conditions by hydrogen coloride as well as by bromine and

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OPERHOMA STATE UNIV STILLWATER DEPT OF CHEMISTRY

(1) Effect of Lattice Potential Upon the Surface Diffusion of Si on Sii100.

DEC 85 5

PERSONAL AUTHURS: NoorBatcha, I Raff, Lionel M. :Thompson, Donald L.

CONTRACT NO AFOSR-82 0311

PROJECT NO. 2303

TASK NO. A2

MONITOR: AFOSR TR-86-0599

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in The Jn1. of Chemical Physics, v83 n11 p6009-6011, 1 Dec 85.

ABSTRACT: (U) The surface diffuision of silicon atoms on Si(100) is examined using three different lattice potentials. Jump frequencies of Si atoms between adjacent adsorption sites are computed on each potential surface at 800, 1000, 1200, and 1500 K using classical trajectory methods. Diffusion coefficients are obtained directly from the jump frequencies and activation parameters from Arrhenius plots of the diffusion coefficients. The activation energy obtained in our previous calculations using Weber's lattice potential is shown to be too small due to a lattice force field whose force constants are too large by about 25%. The best results are obtained with the Keating potential. This surface gives an activation energies for Siiloo and Siilli surfaces obtained in our previous studies, suggests an activation energy of 5 25 kcal/mol for Si diffusion on Siilli. This is in very good accord with the measured value of 4.6 kcal/mol obtained in ultrahigh vacuum deposition of silicon, Reprints!

DESCRIPTORS: (U) +DIFFUSION, +SILICON, +CRYSTAL LATTICES, +SURFACE REACTIONS, ACTIVATION ENERGY, ACTIVATION.

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Gross Beam Saturated Interierence Spectroscopy in

SAINESVILLE OFPT OF CHEMISTRY

0 Winefordner d. Zizak G. "Lanauze, d. PEPSONAL AUTHORS

F49020-84 C 0002 CUNTRACT NO

2303 PROJECT NO.

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18 85.0163 AF 05P MONITOR

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Pub. in Applied Optics, 3124 1.26 p3319 3321, 15 Cct 85 SUPPLEMENTARY NOTE:

spectroscopy is to region the intensity of the probe beam The interference mull obtained in a Jamin interforemeter by destructive interference with a reference beam. This The basic idea of saturated interference is distribled when a pump beam caturated the absorption along the the probe heam. In this work, we have is achived using two physically separated laser beams extended the saturated intervaence technique to the hostile environment of a flam by separating and recombing in time two colling ally counterproparting inser pulses preduced by its logan purpod dvo laser <u>-</u> ABSTRACT

PROBABANTES ENVIRONMENTS CASER ALAMS FUMPS CASTR INCUSTS FUNDESCENCE FLAMES SODIUM (V. LASERS) ARRORNION CEFFICIENTS RANDUM POLARIZATION FYCITITION ABSOFFICA DESTRUCTION INTERFERENCE PARENTERES PROBES SCHOOLING DIFFUSION SURFACES, CHARLANGES SPECIFUR TO VEHICLE TOPLINGTICAL . DESCRIPTURS

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PERSONAL AUTHERS AMONOMICH M JACTER & U

CONTRACT NO AFUSP 83 0068

PROJECT NO 2394

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MONITOR AFOSR

TP 56 0775

UNCLASSIFIED REPORT

SUBPLEMENTARY NOTE Pub in Advances in Applied Probability vil 0280-297-1985

ABSTRACT ... Centain aspects of the sample path behaviour of this square processes are studied. In particular, problems related to the behaviour of these processes at their local extrema. Emphasis is placed on behaviour that is qualitatively different to that conserved for Gaussian processes, rather than on phenomena common to both classers of processes, such as previously studied global extremal type results, keywords Density of Heights and Cunauture at Extrema, Horizontal Window Conditioning Reprints

DESCRIPTORS U CHI SOUARE TEST, STATISTICAL PROCESSES REPRINTS GAUSSIAM QUADRATURE

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TEXAS UNIV AT AUSTIN DEPT OF ELECTRICAL AND COMPUTER ENGINEERING

An Analysis of a CSMA/CD - Carrier Sense Multiple Access with Collision Detection: Collision Resolution Scheme.

APR 86 11P

PERSONAL AUTHORS: Liu, Yih-Chiao :Wise, Gary L.

CONTRACT NO AF0SR-81-0047, AF0SR-86-0026

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-86-0795 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Annual Allerton Conference on Communication, Control, and Computing (23rd) Held at Monticello, ILL. on 2-4 Oct 85, p533-542.

ABSTRACT: (U) This paper analyzes the performance characteristics of a packet broadcasting random multiple access computer communication network with a CSMA*CD protocol. The analysis is based on the Enet II protocol, which was designed to effectively resolve collisions in such a network Bounds on the performance of the network are established. Keywords: retransmission; CSMA*Carrier Sense Multiple Access*, Nonparametric analysis. (Author)

DESCRIPTORS (U) *COMPUTER COMMUNICATIONS. *COMMUNICATIONS NETWORKS, COLLISIONS, DETECTION. NONPARAMETRIC STATISTICS. PROTOCOLS

IDENTIFIERS: (U) CSMA(Carrier Sense Multiple Access),
(Computer networks, Packet communications, Ethernet
computer networks, Computer protocols, PE61102F,
WUAFDSR2304A5

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SEARCH CONTROL NO. EVN548 DITC REPORT BIBLIOGRAPHY

Phosphoinositides, PE61102F

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WUAF0SR2312A1

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GORDON RESEARCH CONFERENCES INC KINGSTON RI

Report on the Gordon Research Conference on Molecular and Cellular Aspects of Neural Plasticity (5th) Held at Wolfeboro New Hampshire on 21,50 Jul 85

Final rept. 1-26 our 85 DESCRIPTIVE NOTE

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Dunn Adrian J PERSONAL AUTHORS

AF05R-85 0176 CONTRACT NO

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UNCLASSIFIED REPORT

neuroscientists could be exposed to ongoing work in areas that they might not otherwise be aware of, but which might have import for their own studies. Thus anatomists, neurophysipingical studies, and vice versa. The sessions were informal and concentrated on Factors Affecting the Phosphoinevitides as Second Messergens, formation of New functional Circuits Formation of new neural connections; Pegulation of Neurotransmitter and Hormone Receptors: Modulators of Simple Neuronal Systems: Molecular Models Role of Biogenic Amines and Endorphins in Neuroplasticity, and Molecular Aspects of Nerve Growth conference and deliberately broad, so that a range of Dunation of the Chitical Period in the Visual System; Method of Assessing Changes of Neural Connectivity; may benefit from principles used in biochemical or mechanisms of neural plasticity. The scope of the The focus of the conference was on of Learning. <u></u> ABSTRACT

CATECHOLAMINES MODULATORS, GROWTH GENERAL: NERVE CELLS
NERVOUS SYSTEM LEARNING, MODELS, MOLECULES, NERVOUS
SYSTEM FLASTIC PROFERIFS AMINES VISION, EYE
NEUROSYMMYCT TRANSISSION NEURAL NETS MOTOR NEURONS. "MOLECULAR BIOLOGY, "CYTOLOGY, "NERVES, THE WORLD FOR THE WISHEST CENTRAL NEBRODS SYSTEM SHOTAIACETC

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Big 2: [springliffic] Procedured and Di-Isopropolis, contrologies Metal Satbase. John Press From Projects of Mangarese and Cobalt Carbonyls with Bis Di Isopropoliming Phosphore X Ray crystal Structures of Priz Ni2PMn2 CO 8H and Priz (NPCO3

DESCRIPTIVE NOTE - Journal anticle.

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PERSONAL AUTHURS FING R B FUW F HOTEE M .

CONTRACT NO AFOSP 84 0050

PROJECT NO 2303

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UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Unl of the Chemical Society.
Chemical Communications p1439-1440-1984

ABSTRACT U Reactions of Pr superscript 1 2N 2PH with Mn2 50:10 protechemical in tetrahydrofurani and Co2(C018 ibezane at imbient temperature, give yellow Pr superscript 1 2N 2PM-2-C0-8H and green-black Pr superscript 1 2N 2PM-2-C0-8H and green-black Pr superscript 1 2N 2PM-2-C0-8H and green-black Pr superscript 1 2N 2PM-2-C0-8H with HX (X=C1 and Br) of Pr superscript 1 2N 2PM-2-C0-8H with HX (X=C1 and Br) results in cleving of a Pin bond but retention of the Mn-H bond to give PPr superscript 1 2NPX-Mn2-C0-8H

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AIR FORCE GEOPHYSICS LAB HANSCOM AFB MA

Letermination of Vibrational Energy Levels and Farsile Band Intensities of (12:0:16:02 by Direct Lumerical Diagonalization,

19P

PERSOLAL AUTHORS: Wattson Richard B : Rothman Laurence S

REPORT NO. AFGL-TR-86-0187

PROJECT NO. 7670

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MONITOR AFOSR

TR-86-0187

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Molecular Spectroscopy, v119 p83-100 1986

the AFGL line parameter compilation. This list represents the first published set of band intensity vales derived The Direct Numerical Diagonalization (DND) formulation of the UND method has been implemented as a first step in using the method to calculate properties of observations of both line positions and intensities have determine a dipole moment function from 21 observed band Oxygen 16: parallel bands which are being used to update calculated by earlier DND efforts as well as the contact transformation approach. The results are also discussed the use of finite matrices to represent the Hamiltonian for the potential function and the dipolar coefficients from a consistent quantum mechanical model for a linear operator. The resulting eigenvectors have been used to been incorporated in to the method to yield new values in terms of the effects of truncation errors caused by intensity estimates for Carbon Dioxide (Carbon 12 and technique has been applied to the principal symmetric The results are compared with the potential functions polyatomic molecule. Keywords - Reprints: Absorption: simple polyatomic molecules. Recent high resolution species of carbon dioxide. A three dimensional ABSTRACT: (U)

ND-A172 308

Infrared, Carbon dioxide, Intensities.

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SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIDGRAPHY

CONTINUED AD-A172 308

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

REPRINTS, SYMMETRY CONSISTENCY, THREE DIMENSIONAL, TRUNCATION, OPERATORS-MAYHEMATICS), RADIATION ABSORPTION, INFRARED RADIATION HAMILTONIAN FUNCTIONS, HIGH RESOLUTION, SCRIPTORS USCRABON DIOXIDE, MOLECULAR ENERGY LEVELS, MOLECULAR VIBRATION, COEFFICIENTS, CONSISTED DIPOLE MOMENTS DIPOLES, EIGENVECTORS FRRORS, LINEAR SYSTEMS, OBSERVATION, PARALLEL ORIENTATION, POLYATOMIC MOLECULES, QUANTUM THEORY FORMULATIONS DESCRIPTORS

Comparative Tests of Theoretical Procedures for Studying Chemical Reactions, ĵ

7P 85 Dewar, Michael J.; Storch, Donn M. PERSONAL AUTHORS:

F49620-83-C-0024, NSF-CHE82-17948 CONTRACT NO.

2303 PROJECT NO.

DND: Direct Numerical Diagonalization:

WILLYFGL 76701603

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TR-86-0772 AFOSR MONITOR

UNCLASSIFIED REPORT

of the American Chemical Society, v107 n13 p3898-3902 1985. Pub in Jn1. SUPPLEMENTARY NOTE:

in atomic units 'hartrees!, for conformity with published semiempirical models (MINDO/3, MNDO, AMI) are included for comparison. The STO-3G, 3-21G, and 6-31G+ basis sets cover a wide range, from a minimum basis set (STO-3G) to a split basis set with polarization functions (6-31G+). basis sets indicated above. These are listed in Table II. values for the calculated molecular energies. Conversion factors to other units are shown in a footnote to the calculated by ab initio methods with respect to use of the latter in studies of chemical reactions. The procedure is illustrated by application to the STO-3G. 21G. and 6-31G* models. Parallel results from determined values of and e sub p and e sub p prime for carbon, hydrogen, nitrogen, and oxygen for each of the estimating the effective errors in molecular energies calculations for quite a wide range of molecules are listed in a compilation by People et al. Using them. These have been extensively used and the results of A simple procedure is described for ĵ ABSTRACT

GUANTUM THEORY, AMOLECULAR PROPERTIES CHEMICAL REACTIONS, CARBON, CONVERSION, ENERGY, HOLECULES, OXYGEN, RANGELEXTREMES!, CHEMICAL REACTIONS HYDROGEN, NITROGEN, FUNCTIONS, POLARIZATION, HEAT OF ĵ DESCRIPTORS.

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PERSONAL AUTHORS Chand Namesh (Monkoc, Hadis

CONTRACT NO F49620 83 F-0021

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MONITOR: AFOSR TR 86:0539

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in IEEE Transactions on Electron Devices, VED 32 nb p1064-1069 Jun 85.

minimum compositional grading L for eliminating the spike recently determined, conduction band discontinuity delta EC of 65 percent of the bandgap difference delta Eg heterojunction spike barrier, and the depth and width of respective doping densities on the pland in sides of the heterojunction. Also, for an abrupt heterointerface the difference in barries heights for electron and hole. .U. First-order analytical calculations were transistor (HBT) applications. In the calculations most between the AlixiGail-xiAs and 0.5 respectively, were made for the energy-band diagrams for n AlixiGail-xiAs pGaAs heterojunctions for x = 0.15, 0.3 and 0.5 densities and the applied bias, and is not necessarily employing different compositional gradings and doping expressions and curves were obtained to estimate the compositionally abrupt heterointerface depend on the injections varies between delta Eg and delta EV ithe valence band discontinuity!, depending on the doping the generally accepted value of delta EV. Analytical densities specifically for heterojunction-bipolarused The results show that the position of the the notch in the conduction-band edge for a ABSTRACT

CESCRIPTORS | U + ODPING | BIPOLAR TRANSISTORS BARRIERS. BIAS COMPUTATIONS DENSITY DIAGRAMS DISCONTINUITIES.

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DIAS REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD A172 255 CONTINUED

ELECTRONS, ENERGY BANDS GALLIUM APSENIDES, HETEROJUNSTIONS, MATHEMATICAL ANALYSIS, SIDES, SPIKES, VALENCE BANDS, VALUE, ALUMINUM, GALLIUM ARSENIDES,

CONDUCTION BANDS

PE61102F. WUAFOSR230531

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NEW YORK UNIV N Y

(U) Visual Motion Perception and Visual Attentive Processes.

DESCRIPTIVE NOTE: Final rept. 30 Sep 84-29 Sep 85,

JUN 86 7P

PERSONAL AUTHORS: Sperling, George;

CONTRACT NO. AFOSR-80-0279

PROJECT NO. 2313

TASK NO. AS

MONITOR - AFOSR TR:86-0559

UNCLASSIFIED REPORT

ABSTRACT: (U) The main activities in the fifth year of this grant have been carrying out the experimental research set forth in the proposals (1980, 1984), following up promising leads that developed in the course of this work, and preparing manuscripts for publication.

DESCRIPTORS: (U) *VISUAL PERCEPTION, *ATTENTION MOTION. PERFORMANCE(HUMAN), IMAGES, COMPRESSION, SPACE PERCEPTION, MEMORY: PSYCHOLOGY), AUDITORY SIGNALS

IDENTIFIERS: (U) Motion detection, Auditory memory. Bandwidth compression, WUAFGSR2313A5, PE61102F

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STILMWENTAM RO 1930 ₫ ... ***** CONDITION OF THE Nontringer Partial Orfferential Laughons and Related Problems of Cath Approximations

ADPROXIMATION MATHEMATICS FOUR DIMENSIONAL MATHEMATICS.

*PARTIAL DIFFERENTIAL EQUATIONS

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DESCRIPTORS

SOLUTIONS GENERAL , STRUCTURES, THEORY, WORK, LIE GROUPS

MODELS PHYSICAL PROPERTIES, QUANTUM THEORY,

X-Pade Approximants, Classical physics,

PE61102F, WUAF0SR2304A4

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DESCRIPTIVE NOTE - Final rept 30 Jun 84 30 Sep 85

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> Chudhovsky G. > Chudhovsky, D PERSONAL AUTHORS

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expanded our earlier studies of the structure of infinite particle and mult: string interactions, and where the use of methods from algebraic topology and theta functions where we hope to apply our methods of multiisome of which wore introduced by us in lower dimensional understanding and possibly explicit mathematical solution integrable quantum systems to three and four dimensional applied to the extension of the of the physically realistic classical and quantum models obstructions to complete integrability. We continued and of field theories in dimensions one to four. They aim at in dimensions and four described by systems of nonlinear solved. A totally new area for mathematical studies has structures of the solutions of various physical systems transformations and the geometric interpretation of the and there arise hew multidimensional generalizations of systems Wery little is currently known in these cases factorization equations of Simathices that have to be Bethe Ansatz determining the solutions of completely Ine focus of the authors' work is the pidle, in cases when a system is suspected of being the description of hidden symmetries and analytic completely integrable or at the investigation of been opened by recent progress in the physics of dimensional Lie algebras generated by Baecklund structure of S matrices superstrings

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AD-A172 252

COLLEGE STATION DEPT OF VETERINARY PHARMACHOGY AND PHARMACCLOGY TEXAS A AND M UNIV

Brochemical Regulation of the Response of Sympathetic Nervous System

PROTEINS, RATES, RATS, RESTRAINT, SECRETION, SYNTHESIS NERVOUS SYSTEM, ACETYLCHOLINE, CATECHOLAMINES, DOSAK ENZYMES, EPINEPHRINE, LIMITATIONS, LOW TEMPERATURE, MOLECULAR PROPERTIES, PHOSPHORYLATION, PREPARATION,

> Final rept Jun 84 Feb 85 DESCRIPTIVE NOTE

Vulliet Philip R PERSONAL AUTHORS

AF0SP 84-0122 CONTRACT NO

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admonal moduliary reactivity in vitro as evidenced by the increased secretion of epinophrine from the perfused admenal gland. The specific biochamical processes perfused rat adrenal gland preparation was established in activity of this protein is correlated with tissue levels and now incommental manipulation on the responsivity of the this laboratory to evaluate the effects of physiological inmobilization or cold stress, which result in prolonged distinct protein kinases in up to four unique sites. The aumenal medillary discharge in vivo insult in enhanced of datecholamines and its induction is correlated with Dimiting evine in the synthesis of the catecholamine investigated to determine the michanism by which they adrenal gland. Fictors that modulate tissue levels of The Isolated the enhancement of the bioneactivity of the perfused meunotranomittens as a key marker protein. Tyrosine mechanisms requising the reactivity of the adrenal This project has examined molecular hydroxylass is known to be phosphurylated by four modulate the amount of catecholamines released in investigated using tynosine hydroviase the rate catecholamines and tyrosine hydroxylase are being buraq aux Aprinosad paskadous sid; buyahabun adreral medulla Treatments such as chronic response to a fixed dose of acetylcholine medulls and sampathelic nervous system => ABSTRACT

*SYMPATHETIC FLEELAL GLANUS FAUPENAL MEDULLA Carrender GIOCOGY), PERCHAMISTER

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nutenomous forchoral differential equation to generate a This allows the implication to remove.

Squations of view powerful recent results on strongly A very ctribing relationship is established between such ordinary differential equitions. An evanple, involving a This obtains sufficient condition for an strongly becomposed to be state space functions) differential equations and connesponding bioshemical fieddack leop is considered Keywords; stoady states Stability

STEADY BANACH SPACE FUNCTIONAL AMALYSIS . MAPPING TPANSFUPMATIONS . L09PS. STATE BIDDHFMISTRY FEEDBACK SNELLUNCE OVILNEGULISION SESCRIPT RES

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WISCONSIN UNIV MADISON DEPT OF CHEMISTRY

Vibrational Relaxation Rales and Pathways in Highly Excited Molecules

30 Jun 82 29 Jun 85 DESCRIPTIVE NOTE: Final rept

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Crim, F. PERSONAL AUTHORS

AF0SR-82 0244 CONTRACT NO

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energy transfer pathways for v > or = 2 in both molecules Applying these techniques at higher temperatures gives the self-relaxation rate constants between 300 and 700 K vibration-vibration and vibration-translation, rotation addition, they determine the relative importance of the The techniques of laser double resonance or near-infrared fluo escence detection in combination fluoride. These measurements yield the self-relaxation rate constants for ${\sf HF}(v^*1,2,3,4,5)$ and ${\sf DF}(v^*1,2)$. In detailed data on the rates and pathways of collisional relaxation of HF(v=3,4,5) by H2, D2, CH4, CD4, and CO2 with direct excitation of overtone vibrations provide for Mriv=1-5). Using different partners permits the determination of the rate constants for collisional energy transfer in hydrogen fluoride and deuterium **ABSTRACT**

*PARTICLE COLLISIONS, *CHEMICAL LASERS, *HYDROGEN FLUORIDE DATA RATE, DETECTION, DEUTERIUM COMPOUNDS, EXCITATION, FLUORESCENCE, FLUORIDES, HIGH TEMPERATURE, LASERS, MOLECULES, NEAR INFRARED RADIATION, RATES, RELAXATION, ROTATION, ELECTRON NUCLEAR DOUBLE RESONANCE RELAXATION TIME, MOLECULAR VIBRATION ENERGY TRANSFER ž ·ISOTOPE EFFECT DESCRIPTORS RESONANCE

*Deuterium fluoride, Hydrogen fluoride WUAF0SR2303B1 ĵ IDENTIFIERS PE61102F

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SEAPCH CONTROL NO. EVN54B DILE REPORT BIBLIDGRAPHY

E REGION, MAGNI TOSPHERE, INCOHERENT SCATTERING, REPRINTS FIELDS, INTERPLANETARY SPACE TWILIGHT, ELECTRIC FIELDS

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AD-A172 249

JENTIFIERS: (U) IMF(Interplanetary Magnetic Fields).
Auroral ovals, PE61102F, WUAF0SR2310A2

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Sondrestion Padan Observations of the Effect of the IMF by Component on Polar Convection

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ω DE LA Beaujardiere Odile Michwar, V PERSONAL AUTHORS King. U. H

F49620-83 K 0005, NSF A18-1-21571 CONFRACT NO

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interplaneigny magnetic field dawnidus component (IME By etrongly influences the nighttime polar convection. The chseried about three hours before midright. These are the ings, and produced by sestuand within the madar latitude and he seems ned by cornerdent PMSP article data and by the polar cap between one and might for range of many case by case basis, among the boundaries in the midnight Average patterns of convection, derived raign of the other prientation. A positive By scems to considerate on one orientation of Py is not the mirror . + -11 local times. On one occasion of and dawn spetors, the plasma velocities appear random ing werige drifts are mostly southward. The only times when the predominant volocity component is from Sendre thom radah observations incleal that the natar anymogo batterns are compared with theoretical St Tund floor 15 lange sogities By lange southward valocities are chember southund Wien By is monitore. adam mangumad i magnom densities organize the selectines such that Surveyed flow of e chipge egg co HOYDIGH TEVELSAV

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Neural Dynamics and Depth Perception - Experiments on TINIENTS Perceptual Dynamics of Form. Movements Soft Crashizing Recognition Processes for again sport sport and Codnition, Neural Dynamics of Conditioning Paristorogogy, and Attention and Biological Newton and Mental Disorders Peyshids of ideative in cars Motor Control. Bailistic Eye Psychology Permaniningly Color vision gartace production strops from Shading Conditioning Partitoricamen. APSTRACT 00.00

SOPIDIUSS OF STACE PERCENTURY VISUAL PERCEPTION, BALLIFTICS RICCOLOTAL PHYTHMS COGNITION COLOR VISION DYNAMICS OF MOLFMONTS MENTAL DISORDERS, MULTICHANNEL. NEPODGS SYSTEM AGRECTIONDEY NONLINEAR SYSTEMS OFFICENTION, SELF ORGANIZIMO SYSTEMS SYSTEMS CONTROL FOR ACADE ADAPTATION PATTERN 25237P1679F5

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CINCINNATI UNIV OH DEPT OF CHEMISTRY

9. Ethylaming and Ammonia as Satalysts in the In Situ Precipitation of Silica in Silicone Networks

S.P JAN 86 ٥ Y.ng. Y PERSONAL AUTHORS

2303 PROJECT NO

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TR-86-0734

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in Polymer Engineering and Science, v26 n2 p167-170 Jan 86. ₹n4 SUPPLEMENTARY NOTE:

possibly due to loss of colloidal silica and, in the case ultimate strength of the networks, thus demonstrating the of the ethylamine solutions, deswelling of the networks. ABSTRACT: (U) Both ethylamine and ammonia in aquenus within polyidimethylsiloxane: elastomers. The rate of precipitation rate, and increase in amount of filler solutions catalyze the hydrolysis of tetraethylorthosilicate to precipitate silica fiiler precipitated dramatically increases the modulus and filler precipitation can vary in a complex manner. Increase in catalyst concentration increases the desired reinforcing effects

FILLERS HYDROLYSIS, LOSSES, METHYL RADICALS, NETWORKS, POLYMERS, PRECIPITATES, PRECIPITATION, RATES, REINFORCING MATERIALS, SILICONES, SILOXANES, SOLUTIONS/MIXTURES), STRENGTH/GENERAL), WATER, AMINES, ETHYL RADICALS. SCRIPTORS, (U) (CATALYSTS, (SILICON DIOXIDE), (ELASTOMERS, (CHEMICAL PRECIPITATION, AMMONIA, COLLOIDS). SILICATES, MODULUS OF ELASTICITY DESCRIPTORS

PE61102F, WUAFUSR2303A3 į IDENTIFIERS

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STABBON MONOXIDE "NITROGEN, BOLIZMANN EQUATION, CHANNELS, DISTRIBUTION, DUAL CHANNEL, EIGENVALUES HIGH TEMPERATURE, QUANTUM THEGRY, TEMPERATURE, THERMAL PADIATION, MOLECULAR

RUTATION, MOLECULAR VIBRATION

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(1) Auroral Implications of Recent Measurements on 0(15) and 0±10) Formation in the Reaction of N+ with 02,

Langford, Andrew O. :Bierbaum, Veronica M Leone Stephen R PERSENAL AUTHORS

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Publin Planethry and Space Science 933 n10 n1225 1228 1995 SUPPLEMENTARY NOTE

Recent flowing afterglow measurements have = ARSTRACT

shown that the reaction of N°+ with O2 produces 70 + or 30 or the oxygen atom product as 0.10) and 0.11 as 0.15 fixes results indicate that this reaction does not contribute to the unopal gree. Time emission 9577 A but can account for about 10 of the observed red line. (6399 A surpral emission (Esprints) SCRIFTURS UP AURORAE, AMISSION SPECTRA. ANTIFERIOWS GPFEN COLORA, ANTIFERIORA, REPRINTS OXYGEN NITACOEN 005508187385 RED - COLOR

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Mg0 Gen2 4402 Ge02 F102 Ge02 A1203 Ge02 Ca0, Ge02-S102 F102 Mg0 Hf02 S102, H*02-Mg0 Hf02 Ca0 A1203 Hf02, Hf02 Y203 F102 Hf02 Zr02 S102 Zr02 S103 Zr02 S103 Zr02 S103 Zr02 S103 C203 C200 C200 Hf03 Zr02 S103 Zr02 S103 C203 C200 Hf03 Zr03 Mg0 Hf0 Y203 CA0 Dinary systems as well as Thermochemical Data have been used to calculate the GeO2-150thernal sections in ten Mg3 (102 Si02, Mg0 Si02-Ge02, Ge02 Mg0 Si0-1402 Cop Mg0 1402 Si02 Zi02 and Hf02 Cap Computer Coupled Phase Diagrams and Y203 af temperatures between 700K and 3000K TUVALSAV

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A MNDO Study of I'm Radical Cations ÷

Dewar Michael J. Grady Silbort L FERSONAL AUTHORS Kuhn Daniel R

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Pub. in Organometallics, v4 n5 p1041

1041 1985

SUPP. EMENTARY NOTE:

Radical cations derived from stannane and its alkyltrimethy derivatives (Me3SnR; R - Me, Et. 1-Pr structures agree with experiment. Fragmentations of the t-Bur have been studied, using MNDO. The calculated radical cations have also been studied Ō ABSTRACT

(U) +CATIONS, +TIN COMPOUNDS, +QUANTUM CHEMICAL RADICALS, TIN, ALKYL RADICALS, METHYL RADICALS, COMPUTATIONS, REPRINTS DESCRIPTORS CHEMISTRY

(U) MNDO Modified Neglect of Differential Overlapi, PE61102F, WUAFDSR2303B2 I DENTIFIERS.

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SUPPLEMENTARY NOTE Pub in Synth React, incro Met Org Chem , 145 n2 p149-153 1985.

ABSTPACT (U) Reactions of secondary amines, R2NH with phospholus trichloride are used to propare a society of dialkylamicodionlorophosphines, R2NFC12 (R r Mn Et. 1Fr. 5 (Colobray) and R2M observating 2.3 dimethylamiconion, and 2.2 G. tetramethylprporoting trichloridine, and 2.2 G. tetramethylprporoting trichloridine, and 2.2 G. tetramethylprporoting trichloridines, specialist to 0 triopropylamicolation prosphore is also described Bereichten of Colombia are separated to 15 and 2 the 16 and 4 and 5 and 4 and 5 and 6 and 4 and 6 an

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Pub in Radio Science, v20 n6 p1339-SUPPLEMENTARY NOTE 1347 Nov Dec 37

spectrum of atmospheric motions over the range of periods from a few minutes to many hours that have been made with their interpretation in terms of buoyancy wave theory and vertical velocity spectra are believed to be due to waves turbulence throny. To delp in interpreting these spectra ST MST hadres on the past 5 years. This hange of periods consistent with existing models of internal wave spectra We consider the spectra However, it is possible that these inconsistencies arise includes the periods associated with buoyancy waves and we present come recently determined sinchaft Wavenumber spectra. It is found that madam and airchaft homizontal wind spectra are in reasonable accord with expectations support the hypothesis that quasi two dimensional turbulence coexists with a meanly universal spectrum of of both horizontal and ventical velocities and examine account in existing internal wave models. Nevertheless from Doppler chifting effects that are not taken into the scala of atmospheric motions often referred to by we stress that all the observations we have examined we consider the observations of the Companison of the energy levels and shapes of the from quasi tio dimensional turbulence theory. The horizontal and ventical velocity spectra are not meteurologists as the mesoscale = ABSTRACT

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Publin Applied Spectroscopy v39 n6 SUPPLEMENTARY ANTE D1042: 1047 1945

absorption sendingscopy. FASS Picopt for Ag. Au., and Moand similar to those obtained by emission LCP. pumped pulsed dye laser with frequency-doubles output as study of the stomic fluorescence of Ag Au, Hf In, Mo, Nb Pd Pt Pu Is and Zn Ifa detection limits were found to be in the range of 1.3.58 ng mL appb with a linear dynamic range LDR of over four anders of magnitude occur for Au and Hf. These represent the an excitation source and the inductively coupled argon plasma ICP as an atom ich reservoir was used in the found were supprior to those obtained by flame atomic magnitude occort for Au and HF. These represent the Erist published results for laser excited atomic elements studing easopt for Mo and In and the LODs The combination of an exciner (XeC): fluorescence spectroscopy in the ICP cell for the -- 1 ABSTRACT

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·U· Metal Complexes of Fluorophosphines. Part XIV

Structures of Five Zerovalent Metal Complexes of Methylaminobis Difluorophosphine:

Delar Michael d

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C Chang M , Newton, M PERSONAL AUTHORS: KING R B.

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PPLEMENTARY NOTE Pub in Unl of Organometalise Chemistry v236 p15 30 1985 See also 8 AD ANCE 277 SUPPLEMENTARY NOTE

coordination with four monodmanate (CHP 2NPF2) games and alter of 90 degrees down to 69 degrees. The structurer of CH3-DWFFZ and CH3NHPF2 may be regarded as consisting of two Covolf3 trigonal bips haids linked through a cebalt bypyramid'i coordination with three morodontale (4-N FF2) may diffraction determinations or the structures of the one bidentate CHON-PF2 2 licked, the small bits of the ZNCH3 | For PF2-2NGH3-4 and CHRN-PF2-2-3Cof12 | CO CHRNWPF2 and CH3 ZNPF2 | The phromium atom to CPPF2N-CH1 24 FF2-2NCH3 has a masterised detailed Details are presented of sinks oristal the ideal:2ed 90 degree to 6. degrees The aron coordinated to an axial and an equatorial position of FePS (migonal bipyramic and because of its small bite the binuclear cobalt compleyes CH3N.PF2-233Cc212 [1] file Zerovaient metal complayes Cr.Ff2N CH3-2 4 Ff2 squeezes the relevant bay he beglangle from the rear 2 lighteds and one bidentate JahriPF2 2 lighted the bidentate CHPN PF2-2 Tigord in Fe PF2 240H34 is atom in the PF2 (2NCH34 has a c stanted trigonal angles of the CrP6 octahedra latter liqued distorts one . . cobalt bond

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1. Retrieval of Sinusoidal Signals by Adaptive Notch Filtering

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TR-85-0713 AFOSR MONITOR

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Communication, Control and Computers (23rd), p574-583 Oct Pub in Annual Conference on SUPPLEMENTARY NOTE

that the computational bunden is low due to a simplified signals in additive noise using a cascade implementation variance of the ANF Simulation results are presented to of a least mean square in additive noise using a cascade Filter ANF: The approach taken here has the advantage retrieving the frequencies of sinusoidal or narrrowband implementation of a least mean square Adaptive Notch gradient computation. We present an analysis of the illustrate the operation of the ANF and venify the convergence properties and the steady state error ABSTRACT: (U) This paper presents a method for accuracy of the analysis, iREPRINIS.

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(U) Convergent Scheme for Light Scattering from an Arbitrary Deep Metallic Grating.

6 FEB SF Agassi, Dan , George, Thomas F PERSONAL AUTHORS

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TR-86-0769

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Pub in Theoretical and Applied SUPPLEMENTARY NOTE

Mechanics, p31-41 1985

stochastic behavior of mechanical systems, and have shown But they have also analysis of data. These tools have made centain kinds of are made on these problems, but they have only touched the unsolved problems. Many theoretical attacks hale been that there are certain regularities in this behavior problems, in the control of experiments, and in the understanding of the choosed behavior and its regularities, and or how to analyze and central it. ABSTRAC) (11) Much recent progress in mechanics is revealed the widespread occurrence of chaotic and calculations and measurements easier. surface DESCRIPTORS: (U) *STOCHASTIC PROCESSES, *MECHUALCS, PRUBLEM SOL/ING, MECHANICAL COMPONENTS, ENTROPY, COLLUTER APPLICATIONS APPLIED MECHANICS, THEORY, REPRINTS

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PERSONAL AUTHORS PODINSON'B H (Schumbid, M. Evindamin, L. Thomann H. Kimith

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SUPPLEMENTARY NOTE: Pub in The dol of Physicial Chemistry, v89 p4994-5002 1985

depending upon assumptions about the phonon spectrum estimates unithe temperature dependence of Risubilihange dependence of the electron spin lattice relaxation rate the electron electron dipolar interaction between spins temperature, this model predicts a T to the 1-2 power temperature dependence for R sub-1 at low temperatures polyacetylene is analyzed in terms of a model in which ABSTRACT (U) The temperature frequency, and isotope dependence of R sub 1 is theoretically predicted to be experimental data obtained over the frequency range 35 Miz to 40 GHz. The interpretation of electrolispin electron phase memory relaxation data. EPR line width sub 1 for the paramagnetic defects in pristing transis modulated by one d mensionil diffusion induced by from I squared to T to the 5-2 power. The frequency data and nuclear relaxation data. We consider the implications of this analysis for various soliton described by a angular frequency to the 1/2 power dependence which is found to accumately fit the lattice relaxation data is consistent with ENDOR phonol stattering of the mobile spins. At room descriptions of the paramagnetic eafect

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 $^{\circ}\mathrm{U}^{\circ}$. Cooperative Emission by 1wo Different Atoms into Surface Plasmons.

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PERSONAL AUTHORS. LIU.E. C. George, Thomas F.

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SUPPLEMENTARY NOTE Publish Surface Science 116,1 nt p149, 166 Dec 85.

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Trajectory Study of Nonequilibrium Effects in Diatom Dissociation Reactions

 \mathbf{Y} Burns, George , Cohen, L PERSONAL AUTHORS.

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TR -86 -0771 AFOSR MONITOR

UNCLASSIFIED REPORT

Pub, in the Unl. of Physical Chemistry, v89 n20 p4161-4163 26 Sep 85 SUPPLEMENTARY NOTE:

nonequilibrium energy distribution functions, and rate constants are also unique for a given trajectory ensemble they differ quantitatively from equilibrium distribution coefficients. The findings obtained substantially tighten ensemble) method and justify its further use as a tool to used to study the dissociation of Br in Ar in the linear regime, i.e. with recombination neglected. It was found function dissocation occurs at a precisely determinable determine new observables in chemical reaction kinetics totalling over 100000 trajectories, were unique steady state. Consequently, the steady state up the conceptual framework of the (single uniform that for a given temperature and potential energy functions and the corresponding equilibrium rate Five ensembles of 3 D classical i e with recombination neglected trajectories regime.

*BROWINE, CHEMICAL REACTIONS, COEFFICIENTS, DISTRIBUTION FUNCTIONS, EQUILIBRIUM GENERAL! NONEQUILIBRIUM FLOW POTENTIAL FNERGY, REPRINTS, STEADY STATE, TRAJECTORIES. *REACTION KINETICS, *DISSOCIATION THERMAL PROPERTIES, THREE LIMENSIONAL DESCRIPTORS

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SEARCH CONTROL NO. EVN54B DITC REPORT BIBLIOGRAPHY

8 . 10 AD: A172 123 FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

Temperature Gas Chromatography with an Afonic Determination of Copper in Seawater by High Absorption Spectrometric Detector

DETERMINATION GASES, HIGH TEMPERATURE, INDRGANIC COMPOUNDS, PYRROLIDINES, REPRINTS, SEA WATER, SPECTROMETRY, TEMPERATURE, THERMOELECTRICITY, THIOUREA, TRACE ELEMENTS, PHYSICOCHEMICAL PROPERTIES

IDENTIFIERS: (U) WUALUSR2303A1 PE61102F

COLUMN CHROMATOGRAPHY, DETECTION, DETECTORS

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PERSONAL AUTHORS Onta Fryohisa Smith Benj

Winefordner James D

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UNCLASSIFIED REPORT

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see our nonmixe the the cyper couples out the section of the presidence of The ligg amount of chlorides in seawater contocration conditions of a second community of the condition of the cond the perfermence of Alterant to determine digital derections as sometime by a month contract to high proc by Audionia 11 COLMUNATION Jo nother comment 10 K R and Librario Problem 19 mm 19 give mise to severe inemical as we has physical 41 ausersand Forwards Atomic fluorermente absorption detection In this state interferences related to the compl prepared to the determination of Campando aspendias seguinas de compensión conditional above absorberor addition of thipumpa and extract grinst efforts have more devoted of appropriate pyringliding dithids thice elements and found the codeletapoped a high temperature ga teapenature more thin 1500 Kilf seleng) piononis dynch were fer such as treatment mob as mitrite, We describe an ony enature gas chromatography ப்பட்டு வந்தியில் -' ABSTRICT

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PENNSALVANIO STORE OF LONIVERSITA CORP. OF MATERIALS STIENCE AND ENGINEERING Inansformation Range Viscosity of Fillumbardonate Glasser \supset

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Pantaro.Carlo Shelby James E PERSONAL AUTHORS Tessr, Aleta A

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AFGSR-82-0013 CONTRACT NO

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TP 85-0538

UNCLASSIFIED REPORT

American Ceramic SUPPLEMENTARY NOTE: Society

ISTRACT of Heavy Metal fluoride glasses have been the subject of intense study because of their potential the most widely studied to date. Transformation range viscosity was measured for multicomponent fluorozinconate indicate that the viscosity range from 10,000,000 to the twelth power Pas with an activation energy of the order of 650 to 850 to 1 In general, the effects of alkali fluoride additions on the viscosity of fluorozinconate the fluorozindonate glasses appear to be glasses in the system 0 56ZrF4:0 34 - x:BaF20.06LaF30 04A1F3xRF, where R - Li, Na, K or Cs. The results application as infrared optical fibers. Although many glasses are comparable to those in silicate systems glass forming systems based on fluorides have been investigated ABSTRACT

ESCRIPTORS OF FLUGRIDES FUNCTIONS, FLUGRINE COMPOUNDS, TIRCONATES FLUGRIDES SILICATES, FIBER OPTICS, INFRARED RADIATION, TRANSFORMATIONS ACTIVATION ENERGY ALKALI METAL COMPOUNDS BARIUM, ALUMINUM, REPRINTS DESCRIPTORS

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AD: 1172 122

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CALIFORNIA UNIV SAN DIEGO I A JOLLA DEFIT OF CHEMISTRY

Ether Cleavage Following Insertion of Carbon Monoxide Eta 5 C5Me5 into the Tantalum-S-11con Bond of Tai SiMe3 (C13)

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۵ Arnold John , Tilley, T PERSONAL AUTHORS:

AF0SR-85-(228 CONTRACT NO

2303 PROJECT NO

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TR - 86 - 0701 AFOSR MONITOR

UNCLASSIFIED REPORT

of The American Chemical JPPLEMENTARY NOTE: Pub. in Jnl. Society, v107 p5409-6413 1985 SUPPLEMENTARY NOTE:

ethers with Beta-CH3 groups (ciethy) ether and 2-ethers with Beta-CH3 groups (ciethy) ether to cleavage of an ether carbon-axygan bond to produce the cyclic complexes Cp:Cl3TaOCH:SiMe31C:0:0R: 4 R: Et and 6. R: insertion. In tetrahydrofuran, the reaction of 3 with CO leads to reductive elimination of Me3Si-Cl with formation products which are determined by the react on solvent. In ICH2:30H=CH2: Compounds 4 and 6 have been characterized ethers to an intermediate ketone complex derived from CO labelling studies and derivative chemistry eta 5 - C5Me5), prepared from Cp-TaCl4 and AliSiMe313 0Et2, reacts with carbon monoxide 110-100 ps.1 to yield These reactions are belleved to involve addition of the The tantalum sily! Cp. Tar SiMe3: C13 (3. by elemental analysis. IR and NMR (1H and 13C) of Cp. TaC12(CO)2(THF). ٤ spectroscopy ABSTRACT:

ESCRIPTORS *U**** ***ETHE RS. ***CLEAVAGE. ***CARBON MONOXIDE. ***TANTALUM. ***SILICON. ***CAFMICAL BONDS. ADDITION CHEMICAL DERIVATIVES, ETHYL RADITALS FURANS. ***PYROXYL RADICALS. SOLVENTS. SPECTROSCOPY. YIELD. CHEMICAL REACTIONS. ADDITION REACTIONS. REDJCTION CHEMISTRY: ELIMINATION REACTIONS. CHLORINE DESCRIPTORS

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SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOGRAPHY

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

The MNDO Potential Energy Surface and Tunnelling Dynamics of the Cyclobutane Radical Cation

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<u>L</u> ·Merz,⊬enneth M. Dewar Michael J. PERSONAL AUTHORS:

F49620-83 C-0024 CONTRACT NO

2703 PROJECT NO

AFOSP MONITOR

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TASK NO

TR 86-0702

UNCLASSIFIED REPORT

in Jul of Molecular Structure PUB SUPPLEMENTARY NOTE - v122 p59 65 1985

The calculations contradict a recent ESR energy species funnelling calculations also predict that traposoids at temperatures below 49%. There costilts are then used to explain the observance of a nine line ESR study, where the lowest energy structure was assigned as a published chombus (C sub 27). Our calculations suggest that the trapezoid structure (C sub 27) is the lowest evelobutane madical dation is examined in detail using intercontension, via tunnelling, between equivalent The potential energy surface of the the GVG obutions radical cation unrecessors mand spectra for the evelobutane radical cation the MNDO mothed ABSTRACT

SCRIFTURS UP CATIONS, COYCLOBUTANES PROTENTIAL SURERSY (SURENCE PEACTIONS CHEMICAL RADICALS ENERGY RHOMBUS SURFACES TUNNELING, ELECTRON SPIN RESONANCE MULECULAR STRUCTURE, SPECIFICATION OUANTUM CHEMISTRY DE SCRIPTOPS

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) AM1: A New General Purpose Quantum Mechanical Moleculir Model

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Dewar, Michael J. ; Zoebi ch, Eve G Stewart, James J PERSONAL AUTHORS: Healy, Eamonn F.

F43620-82-C-0024 CONTRACT NO

2303 PROJECT NO.

83 TASK NO

TR 86-0784 AFOSR MONITOR

UNCLASSIFIED REPORT

of American Chemicai Society, v107 n13 p3902-3909 1985, Pub in Jnl. SUPPLEMENTARY NOTE

Panametens are currently available for C. H. O. and N. As the computing time needed. The specific failings in MNDO have been at least moderated thile the average error for molecules of other kinds has also been reduced. The main molecular model. AMI (Austin Model 1), based on the NDDU approximation. Is described. In it the major weaknesses the tests reported here indicate, AMI seems to represent a very real improvement over AMDD, with no increase in gains are the ability of AMI to reproduce hydrogen bonds computing time. Results for 15% molecules are reported of MNDO, in particular failure to reproduce hydrogen A new parametric quantum mechanical have been overcome without any increase in and the promise of better estimates of activation energies for reactions

*MOLECULAR STRUCTURE, 'QUANTUM THEOFY MODELS, PARAMETRIC ANALYSIS REPRIM'S, CARBON, HYDROGEN DXYGEN, NITROGEN HYDROGEN BONDS, MOLECULES Ē DESCRIPTORS

NDDO Molecular Orbitals. Molycular Model, PE61102F, WUAF0SR2303B2 'n IDENT'FIERS

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NEW 1094 DEPT OF CHEMISTRY COLUMBIA UNI:

 U) Conerence Effects in Pump-Probe Meisurements with Collinear Copropagating Beams

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Eisenthal, K. Hein? I 4 Palfrey S PERSONAL AUTHORS

AF05R:84-0013 CONTRACT NO

2303 PROJECT NO

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TR-86 0748 AFOSE MONITOR

UNCLASSIFIED REPORT

in Ultrafast Phenomena, v4 p216-Pub SUPPLEMENTARY NOTE 219 1984

using pulses originating from the same laser, it is necessary to consider the coherent interaction of the two When pump-probe measurements are performed In this case the coherent contribution to the signal may be viewed as a scattering of the pump radiation into the contradiction with earlier predictions that the coherent time scale of the pulse duration. In the usual geometry in which the beams cross at an angle the effects of the coherent coupling on the observed signal are well known pump and probe are simultaneously present in the sample. We consider here the influence of coherence effects on beams of orthogonal polarization. Despite the fact that pulses in determining material relaxation rates on the probe direction by a spatial grating induced when the pump-probe measurements with collinear, copropagating the grating vanishes in this geometry we find, interaction still remains ABSTRACT

COUPLING INTERACTION GRATINGS SPECTRA INTERACTIONS MATERIALS PULSE RATE, PULSES, RADIATION RATES. *LASERS, *PROBES, *PUMPS, COHERENCE SPATIAL DISTRIBUTION. SCALE

WUAF05R2303B2 PE51102F =

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ල ල AD A172 103 TEXAS UNIV MEDICAL SCHOOL AT HOUSTON

Neural and Molecular Mechanisms Underlying Information Storage in Aplysia. Implications for Learning and Memory _

Byrne, John F. PERSONAL AUTHORS

AF0SR-84-0213 CONTRACT NO

2312 PROJECT NO

٩ TASK NO

TR-85-0782 AFOSR MONITOR

UNCLASSIFIED REPORT

Pub, in Trends in NeurosSciences, v8 n11 p478-482 Nov 85. SUPPLEMENTARY NOTE:

turn are regulated by the intracellular second messengers learning and memory. Simple behavioral modifications such underly forms of associative learning such as classical substance. The modifications of transmitter release in several experimental preparations that neuroscientists are using to help understand the mechanisms underlying related to changes in the ability of previously formed Ca(2+) and cAMP. The second messenger systems may act (sensitization) but their specific interactions may separately in the case of non-associative learning as sensitization and classical conditioning can be MSTRACT: (U) The marine Molusk Aplysia is one of synaptic connections to release neurotransmitter conditioning. Keywords, Artificial intelligence

DESCRIPTORS: (U) + APLYSIA, ARTIFICIAL INTELLISENCE, DATA STORAGE SYSTEMS, INTERACTIONS, LEARNING, MODIFICATION, MOLECULAR PROPERTIES, NERVE TRANSMISSION, NERVOUS SYSTEM, TRANSMITTERS, NEURO: JOLOGY, MEMORY: PSYCHOLOGY:, REPRINTS

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Un Laser Induced Collision Processes Polarization Effects and Ionization

STATE UNIV OF NEW YORF AT BUFFALO AMHERST

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George Shue Kai-Shu Devries Paul L PERSONAL AUTHORS: Thomas F

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AF0SR-82 0046 CONTRACT NO

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Publing Spectral Line Stapes, v3 p369 BICH PENINTARY MOTE 392 1985

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(U) Control of Selectivity of Chemical Reaction Via Control of Wave Packet Evolution. PEFSCNAL AUTHORS: Tannor, David J., ; Rice, Stuart A F49620-85-C-0003 AFDSR TR:86:0752 8 2303 8 CONTRACT NO. PROJECT NO

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MONITOR: TASK NO

Publin Unl of Chemical Physics, v83 n10 p5013-5018, 15 Nov 85 SUPPLEMENTARY NOTE:

SSTRACT (U) Is it possible, by control of the nature of the excitation process to control the selectivity of a chemical neaction? Previous fittempts to answer this question have focused attention on the free e.c. wildom of HT DIE sem induced selection or ef Street 11, of Linn of Street that part may may be the control to the a Alter the opening and other an explica poleguly, treating lie explication and the efficient or proposes as specified the poses and various expressions cannot be as the least to the In this start physical a prepared and and are conclusion that, freques of round intrampledution 3 14 1 1 1 1 1 1 1 जंग । । जंग reactions on be administry progresses. The problem of it a body as the costanta a monthum is not in questar paper property and the price antendation i state distributi Vibrations' redistribution e o comment pulse sequence tormattor of a desired than two different dases **ABSTRACT**

ISCRIPTIBS OF FOREMICAL FLATIL BAS HOLLEFRARE VIBRATION FAUNTIONS CHEMICALDS FROM THE FAUNTUM THE CALCALUS OF VARIATIONS CHEMICALS FOREFROE DISTRIBUTION EVOLUTION CENERAL FACITATION (ASERS) MALECULES OFTIMIZATION PROFESS CHUSES, RECOTTITIES SEQUENCES VIBRATION WAVE PACETS WAVEFORMS EMISSION PESCRIPT RS

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TEXAS UNIV AT AUSTIN DEPT OF FLECTRICAL AND COMPUTER ENGINEERING

.U. A Performance Analysis of a CSMA/CD Protocol

DESCRIPTIVE NOTE: Rept. for 1 Oct 30 30 Sep 85.

APR 86 5P

PERSONAL AUTHORS. Liu, Yih Chiao , Wise, Gary L

CONTRACT NO AFOSR-81-0047

PROJECT NC 2304

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MONITOR. AFOSR TR-86-0793

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Midwest Symposium on Carcuits and Systems (28th) Held at Louisville, KY on 19-20 Aug 85.

ABSTRACT: 10 An analysis of some performance characteristics of a CSMA.CD computer network protocol is presented. The analysis is based on the Enet II protocol which is designed to effectively resolve collisions in the network. In this paper we derive an expression for the average time to resolve a collision involving a given number of stations. We also give an expression for the average time until a pocket involved in a collision is successfully transmitted.

DESCRIPTORS (U) *NETWORKS *MESSAGE PROCESSING, *COMPUTER COMMUNICATIONS FERFORMANCE TESTS, COMPUTER PROGRAMMING, DATA LINKS, CONTACL

IDENTIFIERS (U) (Logal area networks) (Computer networks) computer protocols ENET 2 computer networks, CSMA-CD/Carrier Sense Multiple Access Collision Detection PE61102F, WUAFOSR2304As

SEARCH CONTROL NO. EVNS4B DITC REPORT SIBLIGGRAPHY

AD-A172 094 CONTINUED	FUNCTIONS: PARALLEL ORIENTATION, PARTS, POLICIES, RANDOM	VARIABLES, REPLACEMENT
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Expectation, DMRL(Decreasing Mean Residual Life), PEG1102F, WUAFOSR2304A5

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(U) Bisopar Signal Perception and Analysis

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system of back We have used a simulated flight system to MUCH physiological and anatomical correlates of the biosonar Computer reconstruction techniques have been Acoustic's gnal perception, and properties of the ear and brain centers in animals actively engaged in the imaging of specific tangets respect to the potential importance of interference patterns (beats) in biosonar signal detection and record signal emissions and to analyze the response new information has been obtained, especially with This project has pursued behavioral used to study FFT displays and various anatomisal structures Keywords Bioacous ties <u>.</u> analysis ABSTRACT

SCRIPTORS (U. ANIMALS (BIOACOUSTICS ACOUSTIC SIGNALS, ANATOMY BRAIN EAR, EMISSION, FLIGHT SIMULATION IMAGES INTEPFERENCE, PATTERNS, PERCEPTION RESPONSE TARGETS SIGNALS STRUCTURES DESCRIPTORS

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Semiconductor Engineering for High Speed Devices ⊃

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ω Chen. A Sher A Frishnamurthy S PERSONAL AUTHORS:

F49620-85 C 0103 ARPA Order-5396 CONTRACT NO

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UNCLASSIFIED REPORT

This rpt contains a summary of significant accomplishments and progress during the reporting period GaAs, InAs, A1Sb, GaSb, and that properly reproduce the band structures of light III agree with experiment and give sat stactory explanation of several features that whre presidualy thought to be important components, e.g. long-range interactions, sporbit interactions, and molecular CPA. The parameters simple, well characterized alloys dystem. The results anomalous. It is clear that the general trends of the undertaken to test our procedures on a comparatively structures of the 14 three- component pseudo binary structures have been completed and now include all InSb--have been selected and their band structures These calculations were Programs to calculate pure crystal and alloy band calculated. We are now prepared to run the band V compounds -- GaP, InP, AlAs, alloys of these materials data and theory agree . D ABSTRACT

SEMICONDUCTORS BAND THEORY OF SOLIDS CRYSTALS, ENGINEERING, INTERACTIONS, PATTERNS PURITY, BINARY ALLOYS MOLECULAR ORBITALS, SPIN STATES, GALLIUM ARSENIDES GALLIUM PHOSPHIDES, GALLIUM ANTIMONIDES, INDIUM ANTIMONIDES INDIUM PHOSPHIDES ALUMINUM ARSENIPES SILICON ALLOYS, GERMANIUM ALLOYS ELECTPONIC SWITCHING HIGH PAIR ۔ ت DESCRIPTOPS

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NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNC. . WASHINGTON DC

 Partial Support of Board on Atmospheric Sciences and Climate

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PEPSING AUTHORS PERRY JOHN S

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IDENTIFIERS 1 April Climate program GARP Global Atmospheric Project PESITO2 WUAFUSP2310A1

PENYSTUANIA STATE UNIX TUNISPOSITY PARY DEPT OF BLEUPPICAL ENSINE RING U. Studies of Optical Wate Front Conjugation and Imaging Properties of Nematic Ciduid Crystal Films

DESCRIPTIVE NOTE Annual rept 15 Sep 64 14 Sep 8

N 86 499

PERSONAL AUTHORS. Khoo, Iam Choon.

CONTRACT NO AFOSR:84-0375

PROJECT NO 2305

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TR 85-0595

UNCLASSIFIED REPORT

laser induced thermal grating was performed for the first time, and further established the optical imaging and induced thermal index change were studied in the context of optical wave mixings and real time imagings. The basic characteristics, Quantitative documentation of nanosecond nematic liquid crystal film was also demonstrated for the demonstrated. The capability of optical four wave mixing The conversion of infra-red images to visible images via nonlinearity were also experimentally demonstrated that Optical nonlinearities of 1.quid crystals studied in details in theories, and in experiments using to generate amplified reflection and self oscillation in owing to laser induced molecular reorientation or laser mechanisms and the dynamics of the nonlinearities were processing as well as laser oscillator adaptive optics switching capabilities of nematic liquid crystal film will find applications in aptical switching and nower Such a process will be useful for image applications. In this period, new optical intensity real time optical wave mixing process was also switching effects using the transverse optical lasers of various time scales and temporal self 'imiting devices first time

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DOCUMENTS DYNAMICS, FILMS, IMAGE & ROCESSING IMAGES, INFRARED PMASES, LASERS, LIMITATIONC & FOUR CRYSTALS, MIXING OPTICAL IMAGES OPTICAL PROFETTICE (PTICAL SWITCHING OSSILLATION FOWER, PEAL TIME SCALE, SWITCHING, THERMAL PROPERTIES, TIME SRANSVEPSE VISIBLE SPECTRA WAVES

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 $\{U_{\ell}\}$ Thermomechanical Effects in inclastic Materials and Structures.

DESCRIPTIVE NOTE. Annual scientific mapt. 1 Jun 54-31 M·y 85

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PERSONAL AUTHORS | Fedrier Sol P

CONTRACT NO. MFP.,R-64-0042

PROJECT NO 2337

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ABSTRACT 18 The following topics were studied generalization of a set of can litutive equations to include thermal dependence of viscuplastic flow and thermal recovery of bardening determination of the edition thermal recovery of bardening determination of the effective thermal effective thermal effective thermal effective thermal effective thermal effective thermal effective the engine of the general effective equations to the case of large decremination. Publications to the presented program are listed.

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(d) Identifying Coefficients in the Spectral Representation for first Passage lines

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PERSONAL AUTHOPS Brown, Mark Shao Yi Sha

REPORT NO CUNY MBA4 02 TR 84-02 AFOSR

CONTRACT NO AFOSP 34 0015

PROJECT Nº 2304

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UNCLASSIFIED REPORT

48STRACT Unite spectral approach to first passage time distributions for Markov processes requires knowledge of the eigenvalues and eigenvectors of the infinitesimal generator matrix. We demonstrate that in many cases knowledge of the eigenvalues alone is sufficient to compute the first passage time distribution.

DESCRIPTURS OF MARKOV PROCESSES, EIGENVALUES, COEFFICIENTS MATRICES MATHEMATICS SPECTRUM ANALYSIS

IDENTIFIERS OF First passage time. Birth and death processes. Spectral representation, PEG1102F WUAFROSR2304A5

AD-A172-079 774

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

 U) Studies of Liquid Surfaces by Second Harmonic Generation.

DESCRIPTIVE NOTE: Rept. for 1984-1985.

85

FERSONAL AUTHORS. Hicks.J. M. (Kemnitz.K.) Eisenthal,K. B (Heinz.T. F.)

CONTRACT NO. AFOSR-84-0013

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR 1R-86-0755 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Physical Chemistry, v90 n4 p560-562-1986

ABSTRACT: (U) Information on the orientation and relative composition of solute molecules at the surface of a liquid solution has been obtained by the technique of second harmonic generation. In an aqueous phenol solution, the phenol molecules at the vapor/solution interface are found to be oriented with their long axes tilted 50 degs. from the surface normal. The orientation is found to be insensitive to the concentration of the phenol solution. A comparison with surface concentration information obtained from surface tension data is made.

DESCRIPTORS. (U) SURFACE CHEMISTRY SURFACE ACTIVE SUBSTANCES. SOLUTES. PHENOLS. HARMONIC GENERATORS. DYE LASERS, POLARIZATION. MOLECULES. CHEMICAL COMPOSITION. ORIENTATION. DIPECTION. INTERFACIAL TENSION. VAPORS. SOLUTIONS MIXTURES:

IDENTIFIERS: (U) WUAFOSR2303B2, PE61102F

EVN548 SEARCH CONTROL NO. DITE REPORT BIBLIDGRAPHY

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Synthesis of Heteropimetallic Compilers incom Carbonyi Complexes of discrissopropylamino Phosphine

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GEORGIA UNIV

dournal article DESCRIPTIVE NOTE

Z, 3 2 2 0 FITIG. P PERSONAL AUTHOPS

AF0SR 84 0050 CONTRACT NO

2.03 PROJECT NO

82 TASK NO VENCE MONITOR

TR 26 0758

UNCLASSIFIED REPORT

in Inorganic Chemistry, v24 ar. SUPPLEMENTARY NOTE p3094 3095 1925

SO ELECTIONS UCD AS FOLKA BLAN MOLCO (2CD FOLKA BARK (322 ZMM mus) The preliminary observations described in this comminication suggest that the selective cleavage stoonyl complexes . . in the carriety of confain potentially rest or postphoruspritroger things in contrast to the superings strough 14996 dispusably mains groups from motal organizately to nteresting hoteropine tallic dent. 0.5 PPUD - 6-00-4** 00.5#-FU PPN2 P dianylar cromido Peterobinafallic TIME TO SOLVE SOLVE SERVERS PP 2:00 . Con . A R . grant

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COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

Studies of the Chemical Intermediate Diphenylcarbene: Intersystem Crossing, Solvent Effects on Dynamics, Spin State Selective Chemistry, Photochemistry of the Excited Triplet State

24P

ល Ersenthal E Sitzmann, E PERSONAL AUTHORS

AFUSR-84-0013 CONTRACT NO

2303 PROJECT NO

32 TASK NO

TR 86-0749 AFESR MONITOR

UNCLASSIFIED PETURIT

in Applications of Picesecond Spectroscopy to Chemistry, p41-63 1984 Pub SUPPLEMENTARY NOTE

time resolved experiments provides important insight into interconverting singlet and friplet carbene states can be will continue to be the focus of intense study. The study picosecond spectroscopy the time evolution of the rapidly the properties inherent to the carbene system Employing equilibration rate between a splet and triplet states which is of key importance in determining the nature and thus allowing to determination of the spin chemical intermediates, the novelty of their reactions and their unusual spectrescopy, carbones have been and Because of their importance as reactive estimute of the energy separation between these states of intramplecular relaxation processes of carbones by distribution of chemical products and providing an mapped out.

SOLVENTS, FHOTOCHEMIC. C. SPECIFICSCOPY REACTION FINETICS CHEMICAL REACTIONS DYNAMICS MOLECULAR PROPERTIES RELAXATION MOLECULAR STATES SPIN STATES EQUILIBRIUM GENERAL: EMPROPERTIES SOLVENTS, FHOTOCHEMI *CARBENES PHENYL RADICALS EXCITATION, QUENCHING REPRINTS REACTIONS DESCRIPTORS

Singint States Triplet States --IDENTIFIERS

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COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

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Crossing WUAFRSR230382

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AD A172 077

Intermolecular Effects on Intersystem Crossing Studied on the Picc econd Time Scale: The Solvent Polarity Effect on the Rate of Singlet to Triplet Intersystem Crossing of Diphenylcarbene.

84 3P

CONTRACT NO. AFOSR-84-0013

PROJECT NO. 2303

TASK NO. 82

MONITOR: AFOSR TR-86-0748

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jul. of the American Chemical Society, v106 p1868-1869 1984.

ABSTRACT: (U) Intersystem crossing plays a critical role in defining the intramolecular dynamics of diphenylcarbene (DPC) and thereby directly affects its spin state depdent chemistry. In the studies reported here the diphenylcarbene is generated by photoexcitation of diphenyldazomethane in the ultraviolet, which yields DPC upon loss of nitrogen from the excited singlet state of the diazo compound. Once formed, DPC will undergo energy relaxation via intersystem crossing to produce the ground triplet.

DESCRIPTORS: (U) +CARBENES, +PHENYL RADICALS, +MOLECULE MOLECULE INTERACTIONS, +PHOTOCHEMICAL REACTIONS. TRANSPORT PROPERTIES, DYNAMICS, SPIN STATES, EXCITATION, RELAXATION, GROUND STATE, SOLVENTS, POLARITY, REPRINTS

IDENTIFIERS (U) Crossing, Singlet States, Triplet States, WUAFOSR2303B2, PE61102F

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SEARCH CONTROL NO EVN548 DITLY PEPPRI BIBLINGRAPHY

NAVAL ORDNANCE TEST STATION CHINA LAME CALLE MICHELSON AD - A172 071

Un Expatmospheric Applications of Observants and Smokes

DESCRIPTIVE NOTE Final rept

PERSONAL AUTHORS WITHBIM, H

AF0SF 85 0011 CONTRACT NO

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TASK NO

AFUSR TP 36 0634 MONITOR

UNCLASSIFIED REPORT

Statistical Distribution of Collective Electric Fields in layinged Particle Gases, Covariant Chobingmagnetic Theory Equilibrium of Mignetic Particle Chairs in Homogeneous Magnetic Fields Diffusion and Coagulition of Magnetic Dipole Particles in Inhomogeneous Mignetic fields, Contents Dissociation Association or Ingrital Frames with Substratum ford

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÷/9 AD-A172 070 ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI ITALY

Anticholinesterase Effects on Number and Function of Brain Muscarinic Receptors and Central Cholinergic Activity, Drug Intervention

31 Dec 84:30 Nov final rept DESCRIPTIVE NOTE:

650

Console Stivana PERSONAL AUTHORS

AF05P - 85 - 0025 CONTRACT NO

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TF-86-0624 AF 35R MONITOR

UNCLASSIFIED REPORT

riduced by DOVP can, to some be dissociated from the cholingsterise inhibition dichlorovinyl phospate, combined with drug treatments were studied on rat brain regimal cholinergic parameters accellylcholine content, choline content. chronically with DDVP. ACHE activity was reduced by more former in cholinesterase poisioned rats. In rats treate proportion of intraneural acyticholine in favor of the same time. Ach content in these regions was not altered Marked tolerance to the ACh accumulating action of DDVF acetylcholinastemase, cholina keetyltranserase sodium aw that the increase an treatments with the organophosphorous challinesterase intertern with the feedback may cause a chift in the dependent high affinity cholor uptake muscurinic stimulate a positive feedback sechanism to shut down cholinergic cerve Orugs that possibly than 70% in the streatum, hippocampus and contex inhibitor DDVP dichlorvos or cimpthyl 0-12-2 term nails and this is held to be at least partly The effects of acute and chronic results in an intraneural accumulations of the responsible for the increase in acetylcholine cholingic neurotransmitter of the drive DOVP appears to brain regional acetylcholine receptor subtypes of Results 5 ABSTRACE

DITC REPORT BIRLIOGRAPHY SEARCH CONTROL NO EVN548

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and cross tolerance to the increase produced by physostigmine were induced in the striatum but not in the hippocampus or cortex.

DESCRIPTORS: U 'CHOLINESTERASE INHIBITORS.
*ACETYLCHOLINE 'BRAIN CHEMORECEPTORS. MUSCARINE.
NEUROCHEMISTRY CHOLINES ACETYLCHOLINESTERASE.
HIPPOCAMPUS. ORGANIC PHOSPHORUS COMPOUNDS. NEUROCHEMICAL
TRANSMISSION. CEREBRAL CORTEX. CHOLINERGIC NERVES. RATS.

IDENTIFIERS: (U) Anticholinesterase effects, Striatum Dichlorvos, DDVP, PE61102F, WUAFOSR2312A5

AD A172 069 12/1 13/13

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF MATHEMATICS

(U) Stabilization and Control Problems in Structural Dynamics.

DESCRIPTIVE NOTE: Annual rept 1 Sep 85-31 Mar 86.

MAY 86

PERSONAL AUTHORS: Chen. Goong

CONTRACT NO. AFOSR-85-0253

PROJECT NO. 2304

TASK NO. A1

MONITOR: AFOSR TR-86-0605

UNCLASSIFIED REPORT

ABSTRACT: (U) The completed research includes significant accomplishments on such problems as the stabilization and control of serially connected beams, point actuators and sensors for second order systems, the boundary element numerical method for two dimensional linear quadratic elliptic problems, quasi-variational inequalities, analysis and design of dissipative joints in structures, a boundary element method based on Cauchy integrals for some linear quadratic elliptic problems, and the stabilization of nonlinear strings.

DESCRIPTORS: (U) *PARTIAL DIFFERENTIAL EQUATIONS, STABILIZATION SYSTEMS, CONTROL SYSTEMS, OPTIMIZATION, ACTUATORS, STRUCTURAL ANALYSIS, DYNAMICS

IDENTIFIERS: (U) Structural dynamics, PEG1102F. WUAFOSR2304A1

DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A172 060 77.4

AD-A172 060 CONTINUED

CHICAGO UNIV IL. JAMES FRANCK INST

S FRANCK INST WUAFOSR2303B1

(U) A Scattering Resonance Description of Very Low Energy Collision Induced Vibrational Relayation.

SEP 85 14P

PERSONAL AUTHURS Gray, Stephen K. : Rice Stuart A.

CONTRACT NO F49620-85-C-0003

PROJECT NO. 2303

TASK NO B1

MONITOR AFOSP TR 86-0753

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Pub. in chl of Chemical Physics, v83 nS p2318-2328 15 Sep 85

states. A study of models loosely based on the He \pm 12:83 bitsub 0 sub uses system reveals that the combined effect for very low energies increase, with decreasing zero collision energy is very sensitive to the nature of inelastic cross section to the proprities of metastable enhancement of the vibrational relaxation cross section approximate resonant state formalism which relates the enhances the contribution of a resonance to the cross section the closer the resonance is to zero collision A study is reported of very low energy collision energy is small the collision dynamics near of a low collision energy resonance and high initial However even in the absence of misonances the cross Because the density or resonances near zero diatomic vibrational excitation cas lead to a lange collision induced vibrational relaxation using an It is found that this effect increasingly the potential energy surface F section energy

DESCRIPTORS (U) +MOLECULAR VIBRATION +RESONANCE SCATTERING PELAXATION TIME, PARTICLE COLLISIONS, LOW ENERGY, HELLUM TOPINE, CROSS SECTIONS, DIATOMIC MOTEOULES EFFPINE

ENTITIERS 'U ibrational milakation, PF61102F,

AD-A172 060

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DEPT OF CHEMISTRY NEW YORK COLUMBIA UNIV

Inverse Deuterium Isotope Effect in the Intersystem Crossing of Diphenylcarbene

Rept. for 1984-1985 DESCRIPTIVE NOTE

86 FEB

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V :Eisenthal. ; Sitzmann, E Langan, J. G. PERSONAL AUTHORS

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AF05R-84-0013 CONTRACT NO

2303 PROJECT NO

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TASK NO

AFOSR MONITOR

TR-86-0754

UNCLASSIFIED REPORT

in Chemical Physics Letters Pub. v124 n1 p59-62, 7 Feb 86. SUPPLEMENTARY NUTE

ISTRACT: (U) The singlet-to-triblet intersystem crossing rate k sub ST of diphenylcarbene (DPC) is found to exhibit an inverse isotope effect in various solvents. An off-resonance coupling model between the initial effect in a given solvent as well as an inverse energy singlet state and a sparse triplet vibronic manifold accounts for k sub ST showing both an inverse isotope gap effect in a solvent series. 4BSTRACT:

SCRIPTORS: (U) CARBENES, PHENYL RADICALS, *DEUTERIUM *ISOT ;PE EFFECT, TRANSPORT PROPERTIES, SOLVENTS, RESON :NCE, COUPLING (INTERACTION), ELECTRONIC STATES, MOLEC ;LAR VIBRATION, ENERGY GAPS, POLARITY, REPRINTS DESCRIPTORS

(U) Crossing, Dibenzocycloheptadienylidene, Singlet states, Triplet states, PE61102F, WUAF05R230392 IDENTIF . ERS I sooc tane

AD A1.2 058

DEPT OF CHEMISTRY GAINESVILLE FLORIDA UNIV

Atomic Emission/Fluorescence Spectrometry with Second Delivative Wavelength Moculation and Its Application to Analysis of Copper Alloy

<u>1</u>

٥ Kurirai.O. :Davis,L. :Winefordner.J. PERSONAL AUTHORS:

F49620-84-C-0002 CONTRACT NO.

2303 PROJECT NO.

4 TASK NO AFOSR TR-86-0763 MONITOR

UNCLASSIFIED REFORT

Pub. in Spectroscopy Letters, v18 n10 SUPPLEMENTARY NOTE: p781-789 1985

ð were collected simultaneously with sinusoidal wavelength system consisted of a continuum scurce, argon-separated air/acetylene flame and a wavelength-modulated monochromator. Limits of detection of several elements were measured. This method was applied to the analysis can copper alloy and Co, Cu. Fe. Mn, Ni. Pb and Zn were Atomic emission and fluorescence signals modulation and detection of the second harmonic mode. successfully determined. ABSTRACT: (U)

SPECTROSCOPY, FLUORESCENCE, MODULATION, ZINC, COPPER ALLOYS, COBALT, COFPER, IRON, MANGANESE, LEADUMETAL). *ATOMIC SPECTROSCOPY, *EMISSION ĵ DESCRIPTORS: REPRINTS IENTIFIERS. (U) Wavelength modulation, Atomic emission, Atomic fluorescence, PE61102F, WUAFDSR2303A1 IDENTIFIERS: (U)

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MASSACHUSETTS INST OF TECH CAMBRIGGE RESEARCH LAB OF ELECTRONICS

 Single Prystal Films of Semiconductors on Amorphous Substrates Via a Low Temperature Graphoepitaxy. DESCRIPTIVE NOTE Annual technical rept. 1 Mar 85-28 feb 86

APR 86 18P

PERSONAL AUTHORS Smith Harry I

CCNTRACT NO AFOSR 85 0154

PROJECT NO 2335

TASK NO B2

MENITOR AFOSP TP 86 0751 UNCLASSIFIED REPORT

ISTRACT UP The objective of this program is to carry out basic present in order to acquire fundamental understanding which will permit the development of a

general to temperature process for obtaining oriented

defect fram single onystal semiconcurrior films on

amorphous substrates

DESCRIPTORS UP FEMICONDUCTING THEM STAGLE CRYSTALS, SUBSIDATES AMORPHOUS MATERIALS (HOT)N GROWING SURFACE THERSY TOW ROMBARDMENT GERMANISC APPLICATION DOPING RECORSTAGENS ARSENIC BORON, ZONE ARTISTS

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AD-A 72 055 7/4

TEXAS UNIV AT AUSTIN DEPT OF PHYSICS

U) High Resolution Electron Energy Loss Studies of Chemisorbed Species on Aluminum and Titanium.

DESCRIPTIVE NOTE: Final rept. 1 Apr 83-31 Mar 86,

APR 86 14P

PERSONAL AUTHORS: Erskine, d. L.

CONTRACT NO AFOSP 83-0131

PROJECT NO 2303

TASK NO. A2

MONITOR: AFOSR TR-86-0750

UNCLASSIFIED REPORT

processes at metal surfaces. The research during the grant period being reported has been highly successful in a advancing the state of the int in instrumentation, but developing lattice cynamical rechniques for calculating. electron energy loss spectroscopy to investigate chemical related in scattering mechanisms and selection rules that promenties and the crder disorder phase transformation of the vibrational properties of surfaces and demonstrating the application of these techniques to structure interesting relationship between the surface vibrational · chemisorption a. Al and la rivel underlayer formation 188065 This project utilized high resolution govern tigm Our expaniment have also uncovered an the fundamental determination, c) exploring "Fe application of ← examining some vibrational spectroscopy to oddunning is a consequence surfaces ABSTRACT

DESCRIPTORS (U) SURFACE CHEMISTRY, FELECTRON
SPECTROSCOPY MOLECULAR VIBRATION, CHEMISORPTION, PHONINS,
LATTICE DYNAMICS, ORDER DISORDER TRANSFORMATIONS,
TUNGSTEN ALUMINUM, TITANIUM, VIBRATIONAL SPECTRA, NICHEL
RESERARCH MANAGEMENT

10ENTIFIERS (U) Vibrational Spectrscopy, EELS Electron Fibrigy Loss Spectroscopy), PE61102F, WUAFOSR2303A2

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 ∞ Chen, A .Krishnamurthy.S Sher A PERSONAL AUTHORS

Stonebraker, Michael , Anderson, Erika

Hanson, Eric ; Ribenstein, Brad

PERSONAL AUTHORS

AF05R-83-0254

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ELECTRONICS RESEARCH LAB

CALIFOPNIA UNIV. BEPKELEY

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UNCLASSIFIED REPORT

the previous report an to predict v-E behavior in various materials that exhibit an indirect gap are not suited for high speed devices. However, there are some interesting features to their behavior, e.g. a large negative temperature coefficient of the mobility which could prove was further generalized to calculate v-E characteristics alloys. The two valley single electron temperature model AS during the 3rd Quarterly reporting period. Our aim has been to improve the accuracy of the model described in õ electrons increases. Electrons lose some energy to the assuming that energy transfer takes place only through longitudinal optical phonons. Based on our preliminary calculations we conclude that alloys with constituent This report summarizes accomplishments the electric field is increased, the average energy without assuming a constant energy relaxation time. lattice. The nate of energy loss is calculated by to be useful in temperature sensors calculations ABSTRACT

*SEMICONDUCTORS, *ALLOYS, *TEMPERATURE MEASURING INSTRUMENTS, ELECTRONS, INDIUM FHOSPHIDES, PHONONS, ENERGY TRANSFER MOBILITY GALLIUM PHOSPHIDES, . -ANTIMONIDES DESCRIPTOPS

Speeds High Lattices Crystall, Gallium indium, Indium Arsenides Optical phenons. ĵ IDENTIFIERS

72 TASK NO

TR-86-0781 AFOSR MONITOR

L'NCLASSIFIED REPORT

This paper explores the use of commands in management systems. Basically, an ADT facility allows new data types, such as polygons, lines, money, time, arrays, of floating point numbers, bit vectors, etc. to supplement the built-in data types in a data base system. In this paper we demonstrate the power of adding a data. also propose three extensions to the query language QUEL a query language as an abstract data type (ADT) in data type corresponding to commands in a query language. to enhance its power in this augmented environment _ ABSTRACT

SCRIPTORS: (U) *COMPUTER PROGRAMMING, *INSTRUCTIONS.
DATA BASES. DATA MANAGEMENT, INTERROGATION, COMPUTER
OPERATORS, FLOATING POINT OPERATION, POLYGONS.
LINES(GEOMETRY), MONEY, TIME, ARRAYS. DESCRIPTORS

management systems, QUEL programming language. PE61102F IDENTIFIERS: (U) ADT/Abstract Data Type). Data base WUAF ÖSR2304A2

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EVN54B 222 PAGE

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SEARCH CONTROL NO EVN548 DITC REPORT BIBLEOGRAPHY

NORTHWESTERN UNIV EVANSTON IL DEPT OF CHEMISTRY 20.6 14 2 AD-A172 050

Structural Defects, Measurement of Surface Diffusion (U) Pulsed Laser Processes on Surfaces. Formation of and Direct Detection of Reaction Intermediates

DESCRIPTIVE NOTE: Final rept 1 Jul 31 Des 85.

Stair Peter C PERSONAL AUTHURS:

AF05R 84 0199 CONTRACT NO

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UNCLASSIFIED REPORT

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AFRON UNIV OH INST OF POLYMER SCIENCE

(U) Time-Dependent Response and Fracture of Cross-Linked Polymer,

Final rept. Jan 83-Dec 86 DESCRIPTIVE NOTE

36P DEC 86 Kelley, F. N. : Monton, M., Plazek, D. PERSONAL AUTHORS

CONTRACT NO F49620-83-C-0032

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UNCLASSIFIED REPORT

dets us such as danglong ends and a notable tougheomed reson network structures of two types of lend linewed terminally functional laquid polymers having courty uniform of deliberately distributed initial chara lengths committee material into an eyery The model composite fracture entrange and a theoretical model for rubber foughening by kunz Dagasa containing different nubber particle sizes and partition polyhran ation method. Differences were observed in the inadequate in predicting the composite fracture errorse wis developed by dispersing well characterized nubber based particles, cross-lined and functionalized had mitrix many Thermally stade poly-mobutyl serylate maken when plotted against weight percent particles. synthesis, preparation and characterization of cross-linked polymers, and their time dependent fracture behavior Emphasis was given to well-defined polymer and queries their size and size distribution controlled by the expendence on constituent properties, as well as en et al ivus examined but this model was shown to be and sty model glassy networks in which the netsory fricting energies of the individual mathi- resist This study was concerned with the topolog, wis varied with respect to chain proveilink and network defols such as da predicting the correct functional form made separately solutie fraction, Also, Provide Links reactivity particles

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IDENTIFIERS OF SESTINS PEGITINGE WONCHSP 303A3

CHIC STATE UNIV RESEARCH FOUNDATION COLUMBUS

U Strongth and Structure of Gal-xInvAs Alloys

DESCRIPTIVE NOTE: Quarterly rept no. 1, 1 Oct 31 Dec 85

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PERSONAL AJIHORS - Faber Katherine I , Hirth, John P

CONTRACT NO - F49620 85 C 0129 ARPA Order-5526

PROJECT NO 5526

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MONITOR AFOSP TR 86 0796

UNCLASSIFIED REPORT

ABSTRACT Use Substantial solid solution strengthening of GaAs by In acting as InAs4 units has recently been predicted. This strengthening could account for the reduction of dislocation density in GaAs single crystals grown from the melt flour objective is to investigate the mechanism by which strengthening is produced by Inadditions to GaAs. In the first stages of this study experimental measurements of hardness as a function of temperature and In content are reported.

DESCRIPTORS (U) GALLIUM ARSENIDES INDIUM COMPOLNDS.
CRYSTAL GROWTH, SOLID SOLUTIONS, SINGLE CRYSTALS, CRYSTAL
STRUCTURE DISLOCATIONS CRYSTAL DEFECTS, HARDNESS,
ARSENIDES, ADDITIVES

IDENTIFIERS (U. 1991) um Indium Arsenides, LPN OSURF 764977-717535 WUAFOSR55260/FFE61102F

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multivariate IFPA is discussed with emphisis on the Block Section 2 2 and multipariate IFR are considered in Section 2 4 and in Section 2 5 the topics of multivariate This paper describes only a few and Savits 1980 class Multivariate NBU is covered in Multivariate nonparametric classes have fundamental developments prior to 1381 and focuses on authors feel are most important. Section 2 deals with references is well as some discussion of univiriate classes with multi-ariate generalizations in mind see exhaustive but will emphasize the topics which the" been proposed is einly as 1970. For background and multivariato nonparametric classes. In section 2-1 developments since then. The coverage will not be DMRL and HNB/IE are touched on Block and Salits (1981) ABSTRACT

MULTIVARIATE ANALYSIS . *NONPARAMETRIC PELIABILITY SURVEYS, INFOUALITIES STATISTICS DESCRIPTORS

IFR Increasing Failure Rate Univariate analysis WUAFOSP2304A5 PEBI102F

DEPT OF CLECTRICAL AND COMPUTER MIDSON DV SING DAKED ENCINE LATING

Problems and Its Application to Nonlinear Estimation A Well Posedness Property of a Class of Variational

Rept for 1 Oct 80-31 Oct 86 DESCRIPTIVE NOTE

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Morrison John M PERSUNAL AUTHORS

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Conference on Communication Control, and Computing (23rd) Presented at the Annual Allerton Monticello, 1L, 2-4 Oct 85 SUPPLEMENTARY NOTE

nonlinear estimators that are the solutions to a certain concept of conditional expectation, we investigate their variational problem. These estimators generalize the In this paper we consider a class of continuity and convergence properties

*CONTINUITY ERROR ANALYSIS SCRIPTORS: (U) (ESTIMATES, (CONVERGENCE, (MEAN, (MONLINEAR SYSTEMS, (LEAST SQUARES METHOD))
APPROXIMATION(MATHEMATICS: (CONTINUITY, ERROR AN OPERATORS MATHEMATICS DESCRIPTORS: (U)

EXPECTATION ESTIMATION NONLINEAR ESTIMATION, HILBERT SPACE, PROJECTIONS NORM, ESTIMATOR CONVERGENCE, NONEXPANSIVE OPERATIONS, THEOREM: PROJECTION. ORLICZ SPACES, CONDITIONAL SUBSPACES CLOSED . LINEAR OPERATORS, WUAFDSR2304A5 SPACES. Ē DENTIFIERS PE61102F

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randomization was used, constrainte and anticenservative The applicability of the test to Utilifor a clinical trial where two treatments imbalance of the treatment a location. It is illustrated one to perform exact significance tests of the benefical distribution of a class of the statistics. This public have been assigned sequentially to patients via firrar s is conditional on the 11971: blased coin design a recursion procedure that if the analysis is periormed as if complete demised for obtaining the exall mandomization 2 mandomization censored data is also discussed skuthors of no treatment difference distribution of the statisti errors can be incurred ABSTRACT:

PROCESSES, COMPUTATIONS FORTRAN COMPUTERIZED STM-11 ATTON STATISTICAL TESTS SCLINICAL MELICINE STATISTICAL DISTRIBUTIONS PROBABILITY PATIENTS MISSON RANDOM VARIABLES, BIAS -DESCRIPTORS

"Significance tests, Biased coin desion WUAFUSR2304AS_ PE61102F . D IDFNTIFIERS

THE PERSON SERVICES FROM SCARCE CONTRP. 46 EVN548

AD 3172 0.9

FLORIDA STATE HALL TALLWASSIE DEPOSE STATISTED

 U. Supports of BIR Balanced Incomplete block Designs An Algebraic and Scaphagal Study

DESCRIPTIVE NOTE TACKINGS FIRE

60

PERSONAL AUTHORS FOODY W Hedayat, A

REPORT NO TR 86 02

CONTRACT NO AFOSP 25:0320

PROJECT NO 22

MONITOR AF

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TASK NO

1 AFOSP TP = 6 0625 UNCLASSIFIED REPORT

ABSTRACT Up The structure and the size of the supports of balanced incomplete block (BIB) designs are explored. The concepts of fundamental BIB designs is introduced and its usefulness in can be reduced via a technique call trade on a design if new graphical method of studying the supports of BIB designs with blocks of size three is introduced. Several useful results are obtained via this graphical method. In particular, it is shown that no BIB design with seven varieties in blocks of size three can be built based on sixteen distinct blocks. Contributions made here have immediate applications in controlled experimental designs and survey samplings.

DESCRIPTORS OF FEXPERIMENTAL DESIGN, GRAPHICS, OPTIMIZATION MATHEMATICAL PROGRAMMING, GRAPHS, SET

IDENTIFIERS (U.) BIB-Balanced Incomplete Block (PE61102F) WIJAF05P2304A5

AD A172 028 4/2

COLORADO STATE UNIV. FORT COLLINS DEPT OF ATMOSPHERIC SCIENCE.

(U) The Atmospheric Heat Budget Over the Western Part of the Tibetan Plateau During MONEX. 1979.

40V 85 16P

PERSONAL AUTHORS Zhigiang.Feng :Reiter,Elmar R. :Longxun, Chen :

CONTRACT NO. AF0SR-82-0162

PROJECT NO. 2310

TASK NO. A1

MONITOR - AFOSR TR-86-0740 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub, in Advances in Atmospheric Sciences, v2 n4 p455-468 Nov 85.

rainy season. Detailed heat budget calculations were also which had good station coverage. During periods with area western Tibet has been computed for the period beginning with the last ten days in May. 1979 and extending through prevailed throughout the troposphere with maxima near 400 averaged rainfall <1 mm/day an atmospheric heat source maximum was located over southwestern Tibet near the 500 offers a significant contribution after the start of the ABSTRACT: (U) The atmospheric heat source strength over hPa Time series analyses of the heat source components the total atmospheric heat source is strongly August, 1979. Our results show a significantly smaller carried out over limited regions of southwestern Tibet coefficient suggested by observations and numerical modeling experiments. In the north, sensible heating, provides the dominant input into the atmospheric heat source, whereas in the so them part latent heat, LP. exceeded 4 mm/day, ascending motions and heat sources heat source than that obtained by other authors. The discrepancy is mainly due to adjustments in the drag modulated by the release of latent heat. Atmospheric troposphere in a layer of subsidence. When rainfall nPa level, while a heat sink dominated the upper show that

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SEARCH CONTROL NO. EVN54B DIIC REPORT BIBLIOGRAPHY

> CONTINUED AD A172 028

radiational cooling reveals a phase shift in its relation observation period a correlation of that cooling exists mainly with the net radiation at the top of the during the last part With the net radiation During the first part of the with precipitation at the ground atmosphere

"IRGEOSPHERE, "HEAT FLATEAUS, CHINA SCRIPTORS UP TROPOSPHERE, PHEAT PLATFAUS, COMEST DIRECTION. SOURCES VARIATIONS STATISTICAL ANALYSIS, PEPRINTS DESCRIPTORS

Heat budget WUAFTUR23 TAIL PESTIG2E =: IDENTIFIERS

12.1 AD-A172 027

NJ DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE PRINCETON UNIV

July A Class of Low-Noise Computationally Efficient Recursive Digital Filters with Applications to Sampling Rate Alterations.

10P

Ansari, Rashid : Liu, Bede PERSONAL AUTHORS

AF05K-81-0186 CONTRACT NO.

2304 PROJECT NO

46 TASK NO

TR 86 0715 AFOSR MOLINGM

UNCLASSIFIED REPORT

Acoustics, Speech, and Signal Processing, vASSF 33 nt p90 Pub, in IEEE Transactions on SUPPLEMENTARY NOTE: 97 Feb 85

turns out to be the elliptic cilter itself but in a new configuration. Analytic solicion is also obtained for filters used in decimation is repolation by a factor of 2. Permor norm The analytic digital filters is proposed. For meeting low pass filter filters of this new class the choice of which depends on the location of poles and A new structure for multiband recursive There are several realizations for this new structure specifications, it uses fewer multiplications than approximation to the minimax solution is obtained zeros. Some selected realizations always have low roundoff noise and small limit cycle bounds conventional elliptic filter malizations numerically by minimizing the optimum for odd order low pil

SCRIPTORS: (U) *DIGITAL FILTERS, *RECURSIVE FILTERS *LOW PASS FILTERS, *IRANSFER FUNCTIONS, *SAMPLING, NOJSE, ADDITION, ERRORS, MULTIPLICATION, SPECIFICATIONS, FAIR PRODUCTION, CIRCLES, INTERPOLATION HIGH PASS FILTERS. BANDPASS FILTERS, REPRINTS DESCRIPTORS

*Filter architecture 'Multiband Ĵ I DENTIFIERS:

AD A172 027

AD-A172 028

SEARCH CONTROL NO EVNSAB DOLL FOR AN RIGHT SPAPHY

CHANTIAND AD A172 02"

Zero location critica filters Computation reduction Unit circles (secondation, Cycle bounds) Efficiency Computational Rounding noise Butterworth filters Pairing Pole zero: PE61102F WidelüsR2304A6 filters, Elliphic filters, Add orders, Pole Topations

12 : 1 AD-A172 026

PRINCETON UNIV NU DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE A Robust Conjugate Directions Method for Solving Linear Systems

10P 84 Sullivan, Barry J. : Liu, Bede; PERSONAL AUTHORS:

AF0SR-81-0186 CONTRACT NO

2304 PROJECT NO

ΥB TASK NO AFOSR MONITOR

TR-86-0717

UNCLASSIFIED REPORT

JPPLEMENTARY NOTE: Pub. in the Proceedingts of the Annual Allerton Conference on Communication Control, and Computers (22nd) p450-458 Oct 84. SUPPLEMENTARY NOTE:

STRACT: (U) The method of conjugate gradients is the most popular of several conjugate directions methods. In this paper, a second conjugate directions method, known as A-minimal iterations, is examined. It differs from conjugate gradients primarily in that the direction vectors are computed in a manner independent of the observations. When the observations are the dominant Examples from the area of signal extrapolation support minimal iterations the more robust of the two methods noise source in the problem, this difference makes Athis assertion (Author ABSTRACT

SCRIPTORS (U) *Iterations, *LINEAR SYSTEMS, PROBLEM SOLVING SIGNALS, EXTRAPOLATION, REPRINTS DESCRIPTORS

*Robust procedures, PEG1102F ĵ WUAF0SR2304A6 IDENTIFIERS

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A172 022 20.6 20.2 AD-A172 024

PENNSYLVANIA UNIV PHILADELPHIA DEPT OF PHYSICS

(U) Nonlinear Optical Processes in Organic and Polymeric Crystals and Films

DESCRIPTIVE NOTE: Final rept for period ending 14 May 85

APR 86

PERSONAL AUTHORS Garito, A

CONTRACT NO AFOSR 84 0135

PROJECT NO 2303

TASK NO A3

MONITOR AFUSR IR 85 0606

UNCLASSIFIED REPORT

and liquid crystal polymers. For two such polymer systems When one of the molecules contains PBI and PBI third harmonic generation magazinements show monomolecular films, polymer structures, liquid crystals that they possess lange non-resonant thind order optical one to several hundred molecular conclayors or different Blodgett technique to produce finite sequence, of from Physical studies have demonstrated that organic and polymen structures possess unusually large a presention system the macroscapic nonlinear optical properties, in a large number of material structures, lossiess evertations of highly charge carrelated pifabricated is organic superlattices by the Langmuinsusceptibilities whose origin resides in ultrafast, ultrafast second and third order nonlinear optical phases, and states that include organic crystals, electron statos. Multilayer thin is was bave been properties of such thin films can be controlled saludator priting holecules \supset

DESCRIPTORS UP POLYMERS, PLIQUID CRYSTALS, PORGANIC COMPOUNDS, THIN FILMS, EXCITATION ELECTRONIC STATES, PHONONS VIERATION OPTICAL PROPERTIES HARMONICS, MERASUPFMENT

JOSEN FOL RO DE DE PARTO GRYSTAGS, AMPHIENTOIG MELECULES WORFRAMES 898A3, PEGITORE

AD-A172 024

AD-A172 022 2075 20/6

ILLINDIS UNIV AT URBANA CHARGED PARTICLE RESEARCH LAB

(U) Luminescent Characteristics Study of Mather-Type Dense Plasma Focus and Applications to Short-Wavelength Optical Pumping.

DESCRIPTIVE NOTE: Final technical rept. 1 May 84-30 Sep 85.

JUN 86 3

PERSONAL AUTHORS: Kim, Kyekyoon F.

REPORT NO CPRL 2 - 86 UILU - ENG - 86 - 2551

CONTRACT NO. AFOSR-84-0138

PROJECT NO. 2301

TASK NO. K1

MONITOR: AFOSR TR-86-0688

UNCLASSIFIED REPORT

up to the time the plasma compression is complete. Using the system organic dyes. Diagnostic capabilities included an optical potential as a new light source of high energy, short wavelength lasers. The luminescence study of MDPF showed high speed streak/framing camera, a digital laser energy that the conversion efficiency from the electrical input study its luminescent characteristics and to assess its for the first time as an optical pump, laser activities meter voltage and current probes, and a computer based control, a nitrogen pumped tunable dye laser system, a A Mather type derise plasma focus (MDPF) system was designed built, and tested specifically to multichannel analyzer system complete with a computer were sucressfully obtained from a variety of liquid to the optical output energies is at least 50 .. data acquisition system ABSTRACT (U)

DESCRIPTORS (U) *DYE LASERS. *OPTICAL PUMPING.
PLASMAS PHYSICS! LUMINESCENCE. ULTRAVIOLET LASERS.
EMISSION SPECTRA. EFFICIENCY. TUNABLE LASERS. STREAK
CAMERAS. HIGH SPEED PHOTOGRAPHY. BREAKDOWN:ELECTRONIC

AD-A172 022

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PAGE 231 E

DITC REPORT BIRELOGRAPHS SEARCH CONTROL NO EVN548

AD A172 022 CONTINUED

AD-A172 015 7/3
CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF CHEMISTRY

IDENTIFIERS of MOPF Mather Type Dense Plasma Focus Laser diagnostics Blue Green Lasers, WUAFOSR2301K1, PE61102F

(U) Synthetic, Structural, Spectroscopic, and Theoretical Studies of Decamethylvanadocene Arylnitrenes.

35 9P

PERSONAL AUTHORS: Osborne, Joseph H.;Rheingold, Arnold L.; Trogler, William C.;

CONTRACT NO. AFOSR-84-0021

PROJECT NO. 2303

TASK NO. 82

MONITOR: AFOSR TR-86-0726

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American Chemical Society, v107 n26 p7945-7952 1985.

ABSTRACT: (U) Studies of metal oxo complexes have led to the development of reagents and catalysts for selective oxidations of organic substrates. Isoelectronic metal-nitrene or imido complexes have received less attention but may prove useful for transferring N-R groups to organic molecules. Most examples of metal-nitrene complexes have been of high oxidation state coordination complexes. Properties of organometallic nitrenes need further definition. Cur group has been interested in the properties of unsaturated metal-nitrogen complexes. Herein we report syncheses of a family of arylnitrenes of decamethylvanadocene, structural studies of the 2.6-dimethylphenyl derivative, spin-polarized theoretical calculations, electrochemical oxidations, and EPR spectroscopic studies.

DESCRIPTORS (U) +ORGANOMETALLIC COMPOUNDS +ARYL RADICALS +VANADIUM COMPOUNDS +COMPLEX COMPOUNDS NITROGEN COMPOUNDS SYNTHESIS(CHEMISTRY) CHEMICAL REACTIONS MOLECULAR STRUCTURE ELECTRON PARAMAGNETIC RESONANCE REPRINTS IDENTIFIERS: (U) +ARYLNITRENES, WUAFOSR2303B2, PE61102F

AD-A172 015

SEARCH CONTROL NO. EVN54B DIES REPORT BIBLIDGRAPHY

12.2 AD A172 013

GEORGIA INST OF TECH ATLANTA

Annual technical rend 30 Sep 84:30 Sep DESCRIPTIVE NOTE

Extreme Values of Quedes Point Frocesses and

Stochastic Networks

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Sertoro Richird F PERSONAL AUTHURS

AFOSR 84 0357 CONTRACT NO

2.74 PROJECT NO

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TB 46 0721 AFL SR MONITOR

UNCLASSIFIED REPORT

In optimization of group of systems, progress distributions of contain gongnis rin bow unliables were extreme values of queues and bour processive (Author) modeling of stochastic flows in networks, compound Poisson approximations for pradom variables and point home of the Scarn on ina diader in deramanan yeng mayar in menandan in magamen an processor vera developed. In extremal problems in Wank prognessed on four topics in stochastic networks is family of beinds for the obita i ned TUVALSBY

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20/6 AD-A172 009

ARIZONA UNIV TUCSON OPTICAL SCIENCES CENTER

(U) Research in the Optical Sciences

Final rept. 1 Oct 79-30 Jun 85 DESCRIPTIVE NOTE.

86P

Shannon, Robert R. PERSONAL AUTHORS:

F49620-8C C-0022 CONTRACT NO

2301 PROJECT NO

A TASK NO

TR-86-0632 AFOSR MONITOR

UNCLASSIFIED REPORT

in Thin Evaporated Films, Long Range Surface Plasmon Polarithms; Nonlinear Guided Wave Interactions; Theory of Two Photon Doppler Free Spectroscopy; X Ray Image Intensifiers with Electronic Readout; Optical Bistability, Contents: A Search for Optical Bistability Devices and Basic Understanding Modulated Emittance Spectroscopy. High Resolution Wavefront Sensing Throughthe Atmosphere, Aberrated Gaussian Beams, Jon beam Optical Bistability Experiments to Improve solid State Processing of Optical Coating: on Plastics, Optical Coatings for the X-Ray to Ulcraviolet Wavelength Range ABSTRACT

THIN FILMS PLASMONS, ULTRAJICLET SPECTRA, RESEARCH MANAGEMENT, WAVEFRONTS, DETCTION, HIGH RESCLUTTON SPECTROSCOPY, OPTICAL COATINGS, X RAY APPARATUS SOLID STATE ELECTRONICS, IMAGE INTENSIFIERS-ELECTRONICS *OPTICS, CFTICAL PROFERTIES. GAUSSIAN QUADRATURE LASER BEAMS ŝ THIN FILMS DESCRIPTORS

itti Optical bistability, Polanitons WUAFUSR2301A1, PEG1102F IDENTIFIERS

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EVN54B SEARCH CONTROL NO DITC REPORT RIBLINGRAPHY

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DEPT OF STATISTICS CALIFORM A UNIV PIVEPSIDE Influential Nonnegligible Parameters Under the Search Linear Model ĵ

Interim rept DESCRIPTIVE NOTE

165 APR 86 Ghosh Subir PERSONAL AUTHORS

TR 141 REPORT NO AF05R-86-0048 CONTRACT NO

2304 PROJECT NO

A5 TASK NO AFOSR MONITOR

TR-86 0733

UNCLASSIFIED REPORT

detecting the Influential Nonnegligible parameters under the search linear model are presented. An estimator of the number of nonnegligible parameters which are In this paper some results useful in significant and influential is also given j ABSTRACT

*FACTORIAL DESIGN, LINEAR SYSTEMS MATHEMATICAL MODELS. SEARCHING Ē DESCRIPTORS

Design models WUAFOSR2304A5, PE61102F _ __ IDENTIFIERS:

10.5 20/6 AD A172 005 JNIVERSITY PARK DEPT OF PHYSICS PENNSYLVANIA STATE UNIV

(U) Hole Gratings and Diffraction of Gaussian Beams

Final rept. 1 Jul 83-31 Dec 84 DESCRIPTIVE NOTE:

13P MAR 86

ď Wiggins, T. PERSONAL AUTHORS:

AF0SR-83-0258 CONTRACT NO.

2306 PROJECT NO

60 TASK NO

TR-86-0641 AFOSR MONITOR

UNCLASSIFIED REPORT

extension to Fresnel diffraction was proposed. The use of hole gratings for production of multiple spots for damage effects of their characteristics on the intensity profile an alternative method which applies to pulse systems was permitted a new method for location of laser waists. An size and position for Gaussian beams are summarized and proposed and tested. The general theory of Fraunhofer diffraction of Gaussian beams was developed which Methods for the determination of waist threshold measurements is inherent to this work. The are included ABSTRACT

*LASER BEAMS, *DIFFRACTION GRATINGS SPECTRA), GAUSSIAN QUADRATURE ĵ DESCRIPTORS:

Gaussian beams, Fraunhofer diffraction, PEG1102F, WUAFOSR2306D9 ĵ IDENTIFIERS

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AD-A172 006

EVN54B 234 PAGE

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SEARCH CONTROL NO. EVN548 DIIC PEPORT BIBLIOGRAPHY

17.3 14 2 AD A172 005

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

(U) Application of Nondestructive Testing Techniques to Materials Testing

Annual rept 1 Jan 31 Dec 45 DESCRIPTIVE NOTE

FEB 86

F 100 G PERSONAL AUTHORS

AF05R-84-0053 CONTRACT NO

2008 PROJECT NO

73 TASK NO

TP 25 0635 AFOSP MONITOR

UNCHASSIFIED REPORT

measuroments of surface defects range surface profiles alsper during the resolution of sugar a langua Somper and to a wavelength or best two or and application and than half displacements of a sunface. A wide rophitans adouktic beam has been demonstrated to acrasume manage to a fam greater addition than with conjumition. Additions using about mediens the manage mondestructive techniques has been demanstrated for A mange of fundamentally new optical ್ರವಿ ಕ್ರಾಂತ್ರ ಆಟರಾಶ್ರಕ್ಷಣೆ ತಿನ್ನಾಗಿ ನಿನ್ನಾಗುತ್ತಾಗೆ ಕೆನ್ನಡ S. 1997 & 1898 THE STATE OF THE CONTRACT OF STATE OF the an alternating Colours mothers of ther ton a sport pales evely. D103110

SURFACE POUSTIVESS TISELACEMENT THIN FOR ALGUSTIC BEAMS. PESSIVILL MERSHAY DATA NONSESTRUCTIVE FISHING FACOUSTIC SURFLY OFFICE OFFICE OFFICE WITEPIALS SURFLY ACCUISITION PHOTOLITHOGRAPHY MANUFACTURING V 13(10)8(1)10/2 W no. Helv.

WUA: 0SR2306A: PE61102F -.. IDENTIFIEDS

12/1 AD-A172 004

CALIFORNIA UNIV DAVIS INTERCOLLEGE DIV OF STATISTICS

.U. Estimating IFRA 'Increasing Failure Rate Average) Based on Censored Data

Technical rept. DESCRIPTIVE NOTE

21P NOV 85

Wang Jane-Ling PERSONAL AUTHORS

TR 70 REPORT NO. AF0SR-85-0268 CONTRACT NO.

2304 PROJECT NO

A5 TASK NO.

TR-86-0655 AFOSR MONITOR

UNCLASSIFIED REPORT

estimating a survival curve from randomly right consored asymptotically n maised to 100 to 2 power-equivalent to F Let f subject be the product-limit estimator. PL-estimator of Kaplan and Meier for the line distribution. Since f sub neterneser has the IFRA property and may not be NBU. The modified estimators are easy to compute data when it is known to have increasing Failure Rate estimators share the asymptotic properties of the PL-Azenage liftal or to be New Borter than Used INBUO This paper considers the problem of the desired IfPA - NBU Thus the modified e shown to be - Author sub noticempact intervation We modify E sub nit 10 have and under mild conditions, estimator f sub niti. <u>.</u> properties ABSTRACT

STATESTICS, ESTIMATES, DISTRIBUTION FUNCTIONS, INTERVALS ASYMPTOTIC NORMALITY, SURVIVAL GENERAL: *DISTRIBUTION CURVES, *NONPARAMETRIC ÷ DESCRIPTORY

NBU Hew Better Than Used: Censored data, WUAFOSR2304A5. IFRAcIncreasing Failure Rate Average IDENTIFICAS.

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AD A171 004

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EVMS 48 SEARCH CONTROL NO WHATER PROPERTY CRAMMY

AD A172 003

NORTH CAPOLISM CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

Spreading and Predictoble Sampling for Lychangeable and Processes Sequences <u>____</u>

Technical rept DESCRIPTIVE NOTE

4.15 MAY 86 Kallenberg, 01av PERSONAL AUTHORS

TP 136 REPORT NO F49620 85 C-0144 CONTRACT NO

2304 PROJECT NO

S TASK NO

TP-85 0658 AFOSR MONITOR

UNCLASSIFIED REPORT

not necessarily ordered) predictable stopping times. Both types of result generalize to exchangeable processes in infinite sequence of random variables, s exchangeable, if In the other direction, it is shown that the distribution invariant under sampling by means of a.s. distinct (but martingales and stopping times document discusses some restatements and extensions of Rydll-Nardzewski (1957) proved that an every subsequence has the same distribution. This of a finite or infinite exchangeable sequence is Author this result in terms of continuous time

U. +STATISTICAL SAMPLES. +MATHEMATICAL RANJOM VARIABLES, INVARIANCE, DISTRIBUTION STOPPING RULES! MATHEMATICS! SEQUENCES (MATHEMATICS), STOCHASTIC PROCESSES PREDICTION DESCRIPTORS FUNCTIONS

Un Martingales, Stopping times/mathematics WUAFOSR2304A5 Pe61102F. IDENTIFIERS

8 9 6, 16 AD A172 002

6

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF PSYCHOLOGY

Targets and Real-World Human Information Processing of

DESCRIPTIVE NOTE: Final rept. 1 Apr 83-31 Aug 85

Biederman Irving PERSONAL AUTHORS:

F49620-83-C-0086 CONTRACT NO

2313 PROJECT NO

TASK NO

AFOSR MONITOR

TR-86-0675

UNCLASSIFIED REPORT

compenents would render object identification impossible Substantial progress has been made on an Components (RBC), holds that the perceptual recognition speeded recognition of objects missing parts or lacking of objects is a process in which the image of the input invariant over viewing position and image quality, such volumetric components. These components can be derived is segmented at regions of deep concavity into simple from properties of the two dimensional image that are derived from RBC that selective contour deletion that support the sufficiency of RBC in showing efficient color and texture. Also confirmed was a prediction bridged concavities and prevented retrieval of the as collinearity and symmetry. Experimental results empirical and theoretical analysis of human image The theory, termed Recognition-byunderstanding. ĵ ABSTRACT

RECOGNITION, *IMAGE DISSECTION, *VISUAL PERCEPTION, *COMMINITER APPLICATIONS, COMPREHENSION, IDENTIFICATION, IMAG PROCESSING, EDGES *VISION, *VISIONICS, *PATTERN ĵ DESCRIPTORS

By Components), Interpretation(Image), Nonaccidentalness, Understanding(Image), RBC(Recognition Computer vision, Components Volumetric:, Line drawings, IDENTIFIERS: (U)

AD-A172 002

AD-A172 003

SEARCH CONTROL NO. EVN54B PITC REPORT BIRLIOGRAPHY

> CONTINUED AD - A172 002

4/2 4/1 AD-A171 993

Nonrigid chindts, Concavity, Degraded Emiges, Mitching Edge extrintion, WUAFOSP2313A5, PE61:527

BOSTON UNIV MA DEPT OF ELECTRICAL COMPUTER AND SISTEMS ENGINEERING Dynamical - Chemical Coupling in the Mesosphere and Lower Thermosphere

Final rept. 1 Jun-1 Dec 84 DESCRIPTIVE NOTE:

44 JAN 85

Forbes, Jeffrey M PERSONAL AUTHORS

AF05R-84 0182 CONTRACT NO

2310

PROJECT NO

75 TASK NC AF0SR TR:86-0653 MONITOR

UNCLASSIFIED REPORT

caused by the upward propagating semidiurnal lide excited underside density gradients observed in conjunction with SIPACT. (U) The dynamic ionosphere over Arecibo is simulated using a finite element technique. It is shown that the so called 'collapse of the Arecibo's layer is scintillations associated with the collapse phenomena gradients are capable of tribyaring the gradieus drift in the upper stratosphere by crone heating. The steep the collipse are shown to be due to the shear in the mendional wind field of the semidiumnal tide plesma instability, and accounting for plasmi inregularity formation and coservations of VHH ABSTPACT

U 'ATMOSPHERIC PHYSICS 'ATMOSPHERIC'S 'COUPLING INTERACTION', 'IONOSPHERE, DYNAMICS THERMOSPHERE, MATHEMATICAL MODELS, FINITE ELEMENT WALYSIS, COLLARSE, F.REGION ATMOSPHERIC TIDES OZONE, HEATING, DENSITY GRADIENTS, WIND SHEAR FLASMYS PHYSICS), IONOSCHERIC SCINTILLATIONS MESOSPHER DESCRIPTORS CHEMISTRY

WUAFGSR2310A2, PF61102F õ TOENTIFITES

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SEAPLH CONTROL NO EVNSAB HARVY Linder 3 11 10

si er

ELECTRONICS RESEARCH LAB CALIFORNIA : INIV RESELLEY

Joint Services Flectronics Program

Annual progress rept 1 May 85-30 Apr DESCRIPTIVE NOTE

86 APR Oldham W PERSONAL AUTHORS

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UCB ERL 88 REPORT NO F49520 84 C 0057 CONTRACT NO

2305 PROJECT NO

δV TASK NO

AFOSR MONITOR

TR 86-0692

UNCLASSIFIED REPORT

addition, results of the research to date are summarized Quantum Electronics, Solid State Electronics, Materials and Devices and Information System is presented. In An annual report of the JSEP (Joint Services Electronics Program: in Electromagnetics, and significant accomplishments are indica ed ABSTRACT

JOINT MILITARY ACTIVITIES SCRIPTORS OF FLECTRONICS, JOINT MILITARY ACTIVITIES QUANTUM ELECTRONICS, SOLID STATE ELECTRONICS, INFORMATION DESCRIPTORS

-43 [Flectromagnetics, Materials Electronic] tronic: WUAFDSR2305A9 PE6116.2F Devices Electronic WUAFOSŘ2305A9 IDENTIFIERS

3.5 AD ALC:1 985 MEDICING MA DEPT OF PHYSICS AND ASTRONOMY TUFTS UNIV Radio Wavelength Observations of Magnetic Fields on Active Dwarf-M, RS CVN and Magnetic Stars, 18

5

Lang. Kenneth R. PERSONAL AUTHORS:

N00014-86-K-0068, AFDSR-83-0019 CONTRACT NO.

TR-86-0983 MONITOR

UNCLASSIFIED REPORT

strong dipole magnetic fields, they exhibit no detectable gyroresonant radiation, suggesting that these stars do not have hot, dense coronae. The binary RS CVn star UX stars AD Leonis and Wolf 424 emit rapid spikes whose high gyrofrequency, the coronal magnetic ield strength H = 250 C or 167 G and constraints on the plasma frequency imply an electron density of N sub e = 6 \times 10 to the 9th Arietis exhibits variable emission at 6 cm wavelength on probably sizes smaller than those of the component stars time scales ranging from 30 s to more than one hour. The The dwarf M stars YZ Canis Minoris and AD shortest variation implies a linear size much less than The observed variations might be due to absorption by a < 1.5 x 10 to the 8th power cm. or less than 0 005 of that of the halo observed by VLBI techniques, and most conventional thermal radiation mechanisms. The dwarf M brightness temperatures similarly require a nonthermal power/cc. Coherent plasma radiation requires similar values of electron density but much weaker magnetic fields. Radio spikes from AD Leonis and Wolf 424 haverise times tau sub R < 5 ms, indicating a linear size mechanisms such as an electron cyclotron maser or coherent plasma radiation. If the electron cyclotron the stellar radius. Although Ap magnetic stars have Leonis exhibit narrow band, slowly varying (hours) maser emits at the second or third harmonic of the radiation process which could result from coherent microwave emission that cannot be explained by thermal plasma located between the stars.

*MICROWAVES, CYCLOTRON RESONANCE, COMPARISON, MASERS +DWARF STARS, +EMISSION SPECTRA Ĵ DESCRIPTORS

AD-A171 985

AD A171 993

DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO EVN54B

AD A171 985 CONTINUED

SOLAR FLARES PLASMAS PHYSICS . FLECTRON DENSITY

IDENIIFIERS (U. Canis minoris Leonis ViBlovery Long Baseline Interferometry Gyro resonance

AD-A171 984 12:1

NORTHERN ILLINGIS UNIV DE KALB DEPT OF MATHEMATICAL SCIENCES

(U) On the Structure of iv.k.ti Trades,

14P

PERSONAL AUTHORS - HWANG, H. L.

CONTRACT NO AFUSR-85-0320

PROJECT NO 2304

TASK NO AS

MONITOR AFOSR TR-66 0728

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Unl of Statistical Planning and Inference, v13 p179-191-1986

ABSTRACT: (U) The IV, k, to trades can be utilized to construct new tidesigns from a given tidesign. The goal of this paper is to study the structure of IV, k, to trades and to provide information and guidance for sparching trades on a given tidesign Our study shows that when v on k, to there is no IV k, to trade. In the case IV on the title case IV on the title trade is at least 2 superscript + and can never be 2 superscript + 1 We also the interest the IV k, to the trades of volume 2 superscript + and show that the trades with annihing 2 superscript + and show that the trades with annihing 1 have a unique structure. These later trades called minimal trades can be utilized to ownerate trades on a tidesign.

DESCRIPTORS (UP. SET THEORY, STRADE OFF ANALYSIS, VOLUME, SICTER ANALYSIS, MATRICES, MATHEMATICS, THEOREMS, PERMUTATIONS, INTEGRAL EQUATIONS, STAFISTICAL ANALYSIS PERMITATIONS.

IDENTIFIT 95 (U) *** Trades-Mathematics** T Design, Blocks, PEB1102F WUAFDSR2304AS

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Millinggram of and the Spikes from the Burn Holling Star Aft Learns

ţ. DON SE PERSONAL AUTHORS - Long Kenneth P., Willyon Robert F.

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UNCLASSIFIED REPORT

v305 n1 pt 1 * Jan 95 No copies furnished by DIIC.NTIS Availability inboundatrophysical Unl p363-362

25 s. A sequence of quast periodic pulsations with a mean U The Arecibo Observatory was used to detect and 25 s was superposed on the 50 s burst two circularly polarized bursts at 1415 MHz from the dwarf M star AC (rooms with total durations of 50 s and periodicity of this 3.2 + or 0 3 s and a total ABSTRACT

SOLAR CORONA BINAPY STAPS TRAPPING CHARGED PARTICLES? MAGNETOHYDRODYNAMIO GENERATORS, ESPINES EDWAPE STARS SOLAP FLAPES PADTOFREQUENCY PULSES EVAPIABLE STARS AREA COVERAGE CYCLOTRON RESONANCE POLARIZATION REPRINTS CIPCOLAR LCOPS PUERTO RICO · BURST TRANSMISSION ... DESCRIPTORS

Alven Velnosty, Consolt Loops, UV Catt. Anddabó Observatory, 22 Carts Minoris, Eg Pegast, at Geminorum DENTIFIERS A Millisecond Dunations, LCP Left Circular Columnistion AD Leonis RCP-Right Circular Polymization M Stork Plasma Enequency, Unary Stars SHELLFIERS

TOTIS UNIV MEDFORD MA DEPT OF PHYSICS AND ASTRONOMY

Flame Stars and Solar Bursts: High Resolution in Time and Frequency

PERSGNAL AUTHORS. Lang. Kenneth P.

CONTRACT NO NOOO14-86-K 0058, AFDSR-83 0019

TR 86-0981 AFOSP MONITOR

UNCLASSIFIED REPORT

in Solar Physics, v104 p227-233 1986 (No copies furnished by DTIS) Availability Pub

gyrofrequency implies magnetic field strengths of 250 and ms and a total duration of 150 ms. The individual spikes had rise times of < or ≈ 5 ms. leading to an upper limit to the linear size L < or $\approx 1.5\times 10$ to the 8th power cm are investigated using observations at 20 cm wavelength with high resolution in time and frequency. Observations is symmetric, it has a brightness temperature of I sub B ABSTRACT: (U) Coronal Toops on the Sun and nearby stars estimated radius of Ad Leonis Provided that the emitter closely spaced wavelengths, or high frequency resolution of the dwarf M star AD Leonis with high time resolution polarized spikes with a mean periodicity of 32 + or - 5 0.01 in solar bursts and explained by continuum emission processes but it might in the slowly varying radiation of the dwarf M stirr YZ Canis Minoris. The narrow band emission cannot be for the spike emitter. This size is only 0.005 of the processes in the coronie of the Sun and dwarf M stars > or - 10 to the 16th power K suggesting a coherent using the Very Large Array have revealed narrow band Coronal oscillations might modulate the maser output Observations at be attributed to electron cyclotron maser radiation burst mechanism such as an electron cyclotron maser Maser action at the second or first harmonic of the using the Arecibo Observatory have resulted in the discovery of a quasi-periodic train of circularly 500 G. respectively. Thus, observations with high resolution in time and frequency suggest coherent producing the quasi periodic spikes structure (Delta nu nu < or

AD-A171 992

SEARCH CONTROL NO CIIC FIRORI BIBLIUGRAFHY

CONTINUED AD-A171 982

The screntific potential of these discoveries may be best fulfilled by the construction or a salar referring synthesis radiotelescope

ON OSTARS, OSOLAR FLAP, SOCIOTRON CAMPARISON MASERS EMISSION STED BA MICROWAVES REPRINTS RESONANCE

Solar bunsts, very programmys =

12.1 AD-A171 981

EVN54B

STATE UNIV OF NEW YORK AT STONY BROOK DEPT OF APPLIED MATHEMATICS AND STATISTICS

(U) Modules of Continuum Structures,

Baxter, Laurence A. , Kim, Chul PERSONAL AUTHORS

AF03R-84-0243 CONTRACT NO

1304 PROJECT NO

TASK NO

1R-P5-0724 AFOSR MONITOR

UNCLASSIFIED REPORT

Pub in Reliability and Quality Control, p57 68 1986 SUPPLEMENTARY NOTE

interval, Such a function, g say, is said to be weakly achieved it subig 1 sub it a grib. Xio for each component it an element of C. Suppose that g is weakly coherent and that A it is nonempty. Then A git is a module of it go it glis seakly cohere, and is there exists a CSF K such that g X - FgitX superscript A. nondecreasing mapping from the unit hypercube to the unit the main results or Birnbaum and Espry S theory A continuum structure function (CSF) sa when every other component or in state zero. Using these sufficient for the CSF to attentary value in its image of modules or binary structure functions in particular the Press Modules Theorem, generalize to the continuum superscript (for all X A in a mal path set of gis essimplially, a subset of Courch is necessary and - n 2000000 ABSTRACT

-MAPPING-TRANSFORMATIONS PEPRINIS COMERCACE DESCRIFTIRS

ENTIFIERS OUT CSF Continuom Structure Function (Structure functions Hypercubes, PE61102F, WUATGSR2304A) 1DCN11F1: RS

THE STATE BY BUT AGRAPHY OF COMMENDER NO. EVISAB

AD - A123 947

UNIVERSITY (FOUNDERNING) IFORNINGS ANSCORDED NO HYDROCARRON PESSANDE (NS)

(U) Co 2: 60 % Ostalyzad Reactions of Styrene Gyide with Trialkylailanes

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PERSONAL AUTHURS - Fang Fyung Tae Weber William P

CONTRACT NO AFRISH R2 0333

PROJECT NU 2303

TASK NO B2

MONITOR AFOSP Pro 62 91

UNCLASSIFIED REPORT

SUBPLEMENIARY MOTE Pub in letrahedron letters v28 n44 p5415 5416 (425

ABSTRAGT - 6 The dicobalt octacarbonyl catalyzed reaction of syrene oxide with trialyylsilanes yields a mixture of 1 phonyl 2 trialyylsilovyethane and Z and E 1 phenyl 2 trialyylsilovyethane and Z and E 1 phenyl 2 trialylsilovythena. The natio of these products can be controlled.

DESCRIPTOPS U STYRENES SILANES SOXIDES COBALT COMPOUNDS SOMPTIONS ALMYL RADICALS SYNTHESIS CHEMISTRY CHEMICAL REACTIONS, CATALYSTS.

IDENTIFIERS - Coopert Octacarbonyl PE61102F

AD A171 978 713

CINCINNATI UNIV OH DEPT OF CHEMISTRY

.U. Reinforcing Effects from Silica-Type Fillers Containing Hydrocarbon Groups.

5

PERSONAL AUTHORS. Mark J E. ; Sur, G S .

CONTRACT NO. AFOSR-83:0027

PROJECT NO. 2303

TASK NG. A3

MONITOR: AFOSR TR-86-0736 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Polymer Bulletin, vi4 p325-

329 1985 STRACT (U: Curing hydroxyl-terminated chains

ABSTRACT (U) Curing hydroxyl-terminated chains of poly(dimethyls) loxane (is achieved by reacting them with tetraethoxys) lane, vinyltriethoxys) lane, methyltriethoxys) lane, and phenyltriethoxys) lane, with excess amounts of the silanes hydrolyzed in situ to filler particles. When triethoxys) lanes are used, the vinyl methyl, and phenyl groups must be part of the filler particles and, in at least some cases, the resulting reinforcement is better than that given by the silica particles obtained from the (unsubstiluted) tetraethoxys) lane.

DESCRIPTORS: (U) 'SILOXANES 'POLYMERS 'SILANES HYDPOLYSIS, METHYL RADICALS, ELASTOMERS, REPRINTS

IDENTIFIERS: (U) PEG1102F WUAFPSR2303A3

SEARCH CONTROL NO. EVN54B DILL REPORT BIBLIOGRAPHY

AD-A171 975 20/10 20/8	TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY	(U) Ground States of Molecules, 67, MNDO Calculations for	Compounds Containing Lodine,
AD-A171 976 7 3	UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES LOKER HYDROCARBON RESEARCH INST		.U. Co 2 .Cu. 8 . Catalyzed Reaction of metanos with

Dewar, Michael J. : Healy, Eamonn F Stewart, James J PERSONAL AUTHORS Co 2 150 81 Catalyzed Reaction of Chetanes with Kang Eyung-Tae Wesser William P Trialkylsilanes, PERSONAL AUTHORS S)

CONTRACT NO AF05P R2 0333 CONTRACT NO

F49620-83 C-C024 AF0SR-79 0008

2303

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UNCLASSIFIED REPORT

Pub in Tetrahedric Letters, v26 n47 SUPPLEMENTARY MITE. P5753 575: 1785

hydrofermy stren of osetanes can be controlled by the oboice of trailpying over Triatnyle land gives 1,4 bisand the property while to toyldingthy's long yields sily. Dicobilt octacamponyl cicalyzed silyi--HIND, ATHERY

JAPANES, FALKYLIANES, FILHERS, Company of the control of the contro 1977 (878) 1977 (878)

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UNCLASSIFIED REPTR

TR-85-0725

AFOSR 82

in Jnl. of Computational Chemistry v5 n4 p358-362 1984. Pub SUPPLEMENTARY NOTE:

-0 silicon and phosphorus, for sulfur, for chloring, and for results of calculations for a number of todine containing are limited to compounds of i. The parameters for rodine molecules. Since atomic orbit is (AUS) are not included in the present version of MNSS calculations for redine molecules. The properties included heats of formution, geometries, ionization potentials, and dipole moments parameters for hydrogen carbon hitrogen, and ovygen for benyllium, for boron for fluorine, for aluminum broming. Here we describe the extension of MNDO to a (U) Previous articles of this series have described the MNDO model in detail and have reported were optimized, as usual, by a least squares fit to fifth period element, namely icding together with various experimental properties of a basis set of ABSTRACT

SSCRIPTORS OUT FIDDING GROUND STATE GUANNIUM THEORY COMPUTATIONS, MATHEMATICAL MODELS, MOLECULES, INTEGRALS LEAST SQUARES METHOD, FITTING FUNCTIONS MATHEMATICS. HEAT OF FORMATION, IGNIZATION POTENTIALS DIPOLE MOMENTS DESCRIPTORS

MNDO-Modified Neglect of Differential Overlap : PE61102F, WUAFUSR2303B2 Ē IDENTIFIERS

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AD A171 9'4

DEPT OF ELECTRICAL ENGINEERING AND 7 COMPUTER SCIENCE PRINCETEDNING

A Penturbation Approach to Improving Pisanenko Harmonic Petriesal .. ⊃

OCT 84

Liu Bede Fuhrmann, Daniel R PERSONAL AUTHOPS

AF0SR 81-0186 CONTRACT NO

2304 PROJECT NO

76 TASH NO AFOSE MONITOR

TP =6 0'15

UNCLASSIFIED REPORT

Communication Control and Computers, (22nd) p891-900 in Allerton Conference on 4na SUPPLEMENTARY MOTE

obtained by simply subtracting a small perturbation from the 10.0, element of R prior to finding the minimum autocorrelation matrix R is overdetermined. This problem can be dealt with successfully by a complete eigenvector elgenstructure based (Pisarenko) spectrum estimation is the tendency of the resultant eigen-polynomial to have computationally expensive. Similar results can be One of the apparent drawbacks to decomposition of R, however, this method can be extraneous roots on the unit circle when the eigenzector ABSTRACT

COVARIANCE, SPECTRUM ANALYSIS, ESTIMATES *MATRIX THEORY, EIGENVECTORS, PERTURBATIONS DESCRIPTORS

Harmonic Analysis, Pisarenko Method, Spectrum Estimation Toepitz Matrices. . = IDENT IF LERS

រោ [-4 AC A171 973 CONTARIO - LASH MILLER CHEMICAL LABS TORONTO UNIV

Unsaturated Molecules. The HF + CH(2)CF(2) System, Laser-Induced Addition of Hydrogen Fluoride to

9

Beck, Walter H. Burns, George PERSONAL AUTHORS

AF0SR-84-0127 CONTRACT NO

2303 PROJECT NO.

8 TASK NO AFOSE MONITOR

TR-86-0729

UNCLASSIFIED REPORT

Pub. in Canadian Jul. of Chemistry v62 p2302-2309 1984 SUPPLEMENTARY NOTE:

been no irrefutable proof that in the gas phase reactions also proceed via a 4-centre concerted process. Results of presented here on experiments attempting to achieve laser evidence of any laser-induced products. An upper bound was deduced for the HF \pm CH2CF2 addition rate constant at Although certain classes of reactions are known to occur via 4-centre transition states, there has laser tuned photo-acoustically to the fifth vibrational induced 4-centre addition of HF to several unsaturated level of HF, and the resulting mixture was analysed by There was no mixture of HF and co-reactant was irradiated by a dyerecent information theory calculations on the HFIVE + CH2CF2 system indicate that it should be possible to molecules (C2H2, C2H4, C4H6, CH2CF2, and CF2CC1F). A observe reaction products for HF(v = 5). Results are gas chromatography and mass spectrometry. ABSTRACT (U)

REACTIONS. *HYDROGEN FLUORIDE. *UNSATURATED HYDROCARBONS. *LASER APPLICATIONS. VINYL RADICALS. TRANSITIONS. MOLECULAR STATES. VAPOR PHASES. IRRADIATION. DYE LASERS. *ADDITION REACTIONS, *PHOTOCHEMICAL REACTION KINETICS, CONSTANTS, RELAXATION, REPRINTS ĵ DESCRIPTORS

Vinylidene Fluoride, PEG1102F ĵ IDENTIFIERS.

AD- A171 973

AD A171 974

DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO EVNS4B

AD-A171 973 CONTINUED

AD-A171 964 7/3

WUAF05R2303B1

CINCINNATI UNIV OH

(U) Elastomenic Networks Cross-Linked By Silica or Titania Fillers.

DESCRIPTIVE NOTE: Rept. for Nov 84-Nov 85.

5 3P

PERSONAL AUTHORS. Sur.G S. Mark, J. E.

CONTRACT NO AFOSR-83-0027

PROJECT NO 2303

TASK NO A3

MONITOR: AFOSR TR-86-0735

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Fub. in European Polymer Journal, 921

ABSTRACT: (U) Triethoxysilyl terminated polyfumethylsiloxane! (PDMS) was prepared by reacting polyfumethylsiloxane! (PDMS) was prepared by reacting interhoxysilane with vinyl terminated PDMS having a number-average molecular weight of 11.3 x 1000g mole particles of silica and litania generated in situ by the hydrolysis of tetraethoxysilane and titanium n-propoxide, respectively were found to end link this polymer. The presence of a stable elasterenic network structure was confirmed by stress-strain missurements in elengation.

DESCRIPTORS (U) (ELASTOMFAS) (SILOXANES) (FOLYMERS)

*SILANES (TITANIUM OXIDES (SILICON DIOXIDE)

SYNCHESIS CHEMISTRY) CROSSLINKING/CHEMISTRY (HYDROLYSIS)

STRESS CIRAIN RELATIONS (LONGATION) REPRINTS

IDENTIFIERS (U) END LINKING, PEG1102F, WUAFUSP2303A3

SEAPOH CONTRUC NO EVNS48 ANADVACIDATE LACTORE 0.11

monitors 1DPC and the isoprene reaction monitors 3DPC. In

CONTINUED

AD A171 953

figure 1 it is shown the effect of temperature on the

solvent triplet products are more favored at low and high ration of the quantum yields for triplet (Q3) and singlet (Q1) product information in several solvents. In each

101) product information in several solvents

temperatures than at intermediate temperatures. In figure 2 are shown the results of similar experiments for CH3OD

+DIPHENYL CARBENE, CARRENE/DIPHENYL,

ISOOCTANE, PE61102F, WUAFOSR2303B2

IDENTIFIERS

TEMPERATURE, PHENYL RADICALS, ISOPRENE +CARBENES, +ALCOHOLS, CHEMICAL

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REACTIONS.

REPRINTS

DESCRIPTORS

and t-butanol.

AD-A171 967

DEPT OF CHEMISTRY ACOL MIN COLUMBIA UNI. Temperature Dependence of the Reactions of Singlet and Iniplet Diphanyleanbene Evidence for Reversible Ylide Formation in the Resolution with Alcohols

Cha Yuan Gould Ian Turro Nicholas J PERSONAL AUTHORS

AF05R-84-0040 CONTRACT NO

2303 PROJECT NO

B2

TASK NO

AF0SP MONITOR

TR 85-0737

UNCLASSIFIED REPORT

in Tetrahedron Letters, v26 n48 Pub. SUPPLEMENTARY NOTE p5951-5954 1935 The insertion of iphenyscarbene (DPC) into isomenic cyclopropanes with iospnene. At sufficiently low 3DPC, but a very traps 30PC but does not compete for 10PC in the presence effects, provide additional insight into the carbene-alcohol reaction and are consistent with an articulation methanol, and with isoprene, in several solvents. These findings, together with measurements of product isotope temperature on the products of the reaction of DPC with sufficiently high concentrations, isoprene efficiently viewed as inconsistent with the conventional mechanism between 10PC and 30PC is more rapid than reaction. At attention. It is generally accepted that it is the singlet state of DPC (IDPC), in equilibrium with the ground triplet state (3DPC), that reacts with the DPC yields benzhydryl equilibrium the reaction mechanism is not yet fully understood and recent kinetic data have been the OH bonds of alcohols has received considerable and two efficient quencher of 10PC. The methanol reaction shown in Scheme I We now describe the effect of methyl ether upon reaction with methanol. concentrations of the carbene quenchers, of methanol which is a poor quencher of of the conventional mechanism. alcohols, However ABSTRACT:

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AD A171 962

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DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A171 960 CONTINUED

WUAF0SR2312A5

WRIGHT STATE UNIV DAYTON OH SCHOOL OF MEDICINE

(U) Comparison of PEDA (Perfluoro-n-Decanord Acid) and TCDD on Heart Membranes.

DESCRIPTIVE NOTE: Final rept. 1 May 82-14 Aug 85.

JUN 86 53P

PERSONAL AUTHORS Langley, Albert E

CONTRACT NU AFOSR-32 0264

PROJECT NO 2712

TASK NO A5

MONITOR - AFRSR IR 46-0651

UNCLASSIFIED REPORT

Because much of the loss of adrenergic responsiveness can surface beta adrenergic receptors. An early and dramatic fall in serum levels of thyroid homoones was observed. responsiveness to adrenergic stimulation of hearts from Perfluoro n decanois acid (PFDA) treated rats has been We concentrated our research on the actitity rold actions the explained by the effects of Pristing thyroid hormones body wasting syndrome and hypotherm. The mechanism of thyroxine supplementation could prevent the hypophasia The reduced responsiveness can be of PEDA. The most significant results of this research was the observation ineported in other hereing that characterintic of PFDA treatment without effecting the explained in part by a decrease in the number of cell Our initial observations of a reduced these paradovical actions remains to be determined. examined in terms of functional components of the myccardial membrane _

DESCRIPTORS UP CARBOXYLIC ACIOS, PDIOXINS, FTOXICITY, MEMBRANES, BIOLOGY), PHEART, MYDCARDIUM, STIMULATION-EHYSIDLOGY), NERVES, THYROID HORMONES, LOW LEVEL, BOOK TEMPERATURE, HYPOTHERMIA, ADENYL CYCLASE

Interining in Organoid Acid Perrindro n. P.DA-Per and on Perriods Acid. (200-14) right-ochibenzo. P. drovin. Oravin. 1917,8 Tetrachierodiberzo P. PE611026

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SEARCH CONTROL NO. EVN548 TO TREPUBLI BIBLIGGRAPHY

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CHICAGO UNIV II JAMES FRANCK INST

U) Dynamics of Gas Sunface Interactions Instrumentation

Final rept 1 Jan-31 Dec 85 DESCRIPTIVE NOTE

MAR 86

Sibener, Steven J PERSONAL AUTHURS

AF05R 85-0051 CONTRACT NO

2303 PROJECT NO

A2

TASK NO

AFOSR MONITOR

TR-86-0669

UNCLASSIFIED REPORT

gas surface energy transfer interaction potentials, and a well defined surfaces in an ultra-high vacuum environment photochemistry iradical reactions desorption, ablation). A partial listing of the topics that are being explored in greater as a direct result of the new instrumentation interactions of molecular beams and laser radiation with growth including nucleation in two-dimensional systems, includes surface phonon spectroscopy, the dynamics and procure several pieces of equipment with significantly This instrumentation grant was used to energetics of heterogeneous interactions, thin film variety of laser surface processes such surface enhanced research capabilities for studying the energy transfer, and photoemission. ABSTRACT

TARGET INTERACTIO4S, PHONONS, THIN FILMS, ENERGY TRANSFER, EXCIMERS, AUGER CLECTRON SPECTROSCOPY, ELECTRON OPTICS, REFRIGERATION SYSTEMS, CLOSED CYCLE SYSTEMS, HELIUM SCRIPTORS. FUR *LABORATORY EQUIPMENT, *ELECTRON SPECTROSCORY *INELASTIC SCATTERING, MOLECULAR BEAMS, HIGH VOLTAGE, SPECTROMETERS, VACUUM APPARATUS, LASER DESCRIPTORS

Electron spectrometers, Molecular Photogmission spectra, PE61102F IDENTIFIERS . . U . WUAF0SR2303A2 scattering

AD A171 958

4 / 1 AD-A171 957 UTAH STATE UNIV LOGAN CENTER FOR ATMOSPHERIC AND SPACE SCIENCES (U) Effects of Different Convection Models upon the High-Latitude Ionosphere,

19P

E. Schunk, R. W. Rasmussen, C. PERSONAL AUTHORS:

AF0SR-84-0029 CONTRACT NO.

2310 PROJECT NO.

A2 TASK NO

TR-86-0670 AFOSR MONITOR:

UNCLASSIFIED REPORT

studying the ionosphere are the Volland a d Heelis models models distinguishing the two runs, it was found that the Both of these models provide a similar description of two boundary and in the cusp region. For thesa two parameters fields have an important effect on the ionosphere at high effect requires a knowledge of plasma convection over the celled ionospheric convection, but they ciffer in several Ot obtain a better understanding of the way in the differences caused by the two different convection models dominate the universal time effects. One question ways, in particular, in the manner in which plasma flows It is well known that convection electric latitudes and that a quantitative understanding of their two models were made, with only the convection models distinguishing the two runs. It was found that the two models lead to differences in the ionosphare but often the differences are subtle and are swamped by universal predictions of the height of the F2 peak and in the ion ionospheric model were made, with only the convection temperature, particularly along the evening polar cap entire high latitude región. Two empirical models of plasma convection that have been proposed for use in separate runs of our high latitude, time rependent over the central polar cap and near the polar cap which these two models affect the ionosphire, two time effects. The most notable differences are in Ð boundary.

SEARCH CONTROL NO. EVNS48 DYIC REPORT BIBLIDGRAPHY

CONTINUED 4D-A171 957

plasma density and temperature and determine which of the that arises is whether one could examine measurements of two convection models most accurately represents actual ionospheric convection

JESCRIPTORS (U) *CONVECTION ATMOSPHERIC) *LONOSPHERIC MODELS, PLASMAS PHYSICS : POLAR REGIONS, THERMOSPHERE MAGNETIC FIELDS, STAGNATION POINT F REGION, ELECTRON MANANETOSPHERE, ELECTRIC FIELDS DENSITY

Volland model, Heelis model PE61102F . D WUAF05R231072 DENTIFIERS

AD-A171 954

7/2

o Metal Halide Catalyzed Rearrangements WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY Alkylcyclosilanes ĵ

7

Blinka, Thomas A. ; Wist, Robert PERSONAL AUTHORS:

F49620-83-C-0044 CONTRACT NO.

2303 PROJECT NO

82 TASK NO

TR-86-0588 AFOSR MONITOR

UNCLASSIFIED REPORT

in Organometallics, v5 p128-133 gng SUPPLEMENTARY NOTE:

the exact nature of the catalyst is unknown), a series of cyclobekasilands. For each permethylcyclosiland only one ethylundecamethylcyclohexasilane exhitited both skeletal rearranged product was obtained. With the same catalyst, (U) In the presence of an Alife(Cl3 catalyst the Alife(Cl3 notation is bring used because permethylcyclosilanes (Me2Si'n' n = 5 12, rearrangel to rearrangement and alkyl group redistribution reactions Penethylcyclosilanes, cyclopantamethylenecyclosilanes, react with the Alife)Cl3 causiyst, dopending upon the ethylmethylcyclosilanes eighan decompased or did not A mechainsm form isomeric branched cyclopentasila es or choice of solvent used in the reaction cyclotetramethylenecyclosilanes, and î (Alfects.

SCRIPTORS: (U) SILANES, CYCLIC CLMPOUNDS ALEYL RADICALS, CATALYSIS, ALEMINUM COMPOUNDS, IRON COMPOUNDS, CHLORIDES, CATALYSIS, METHYL PADICALS, ISOMFRS STEREOCHEMISTRY, REPRINTS DESCRIPTORS.

involving a cyclosilane AlifeiCl3 complex is priposed to

explain the observed rearrangement and redistribution reactions. The branching pattern and ring size of the

ngarnanged permethyloyolosilanes are explained by signa

conjugation effects and steric interactions

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IDENTIFIERS

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CALIFORNIA UNIV SANTA BARBARA QUANTUM INST

'U' free E ectron Lasers

15 Feb 84-29 Feb Final technical rept DESCRIPTIVE NOTE:

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Sessier, A. M. . 20 Colson PERSONAL AUTHORS: AF0SR-84-0079 DE AC03-76SF-00098 CONTRACT N.).

2301 PROJECT NO.

Ā TASK NO MONITOR

AF0SR TR-86-0237

UNCLASSIFIED REPORT

JPPLEMENTARY NOTE: Pub. in Annual Review of Nuclear and Particle Sciences, v35 p25-54 1955. SUPPLEMENTARY NOTE:

theoretical development of free electron lasers. There is a review of types of accelerators driving FEL, the history of FELS, and the prospects for the future This paper reviews the experimental and ABSTRACT: (U)

DESCRIPTORS: (U) *FRLE ELECTRON LASERS, PUMPING/ELECTRONICS), ELECTRON ACCELERATORS, COMPTON SCAT(FRING, COMPARISON, TRAVELING WAVE TUBES, LASER AMPLIFIERS, REPRINTS

P.EG. 102F. WUAFDSR2301A1 ĵ IDENTI "IERS

SEF 3CH CONTROL NO. EVNS4B DIIC REPORT BIBLIOGRAPHY

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PE61102F, WUAFUSR2303B2

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IDENTIFIERS

CALIFORNIA UNIV RIVERSIDE DEPT OF CHEMISTRY

Synthesis, Structure, and Electronic Properties of retarCSMe5 2 ViMicron-OC) V(CO:5 A Complex with a Linear V O:C-V Bond, ĵ

s S

Rheingold Arnold L. Osborne Joseph H Inogler William C PERSONAL AUTHORS

2303 PROJECT NO

E 5 TASK NC

TR 89 0727 AFOSR MONITOR

UNCLASSIFIED PEPORT

Pub in Unl of the American Chemical Society 1107 n22 p5792-5297 1985 SUPPLEMENTARY NOTE:

electrostatic interaction between eta C5Me5:2V+ and VC30: The reaction between VCOOB and Leta-CSMeS two unpained electrons and obeys the Curie law between 5 and 293 K. SCC Kalpha DV calculations of leta-C5H512VImus-OC-V CO-S show that nearly degenerate frontier embitals spin 381 ground state. The V-O bend arrises mainly from an 6. however, a small covalent Pricios denation from a citisub 29. orbital on ViCBi6. into a partly occupied toubli and / 0C/V CO/S Crystals of I belong to the space group C2/c. An important ispect of the structure is the linear V-0-C V molety with V 0 = 2 075 \times 4 \times C 0 = 1.167 \times 6 \times A and 4 C = 1.899 \times 5 A Complex I is a paramignetic, contains carbon monoxide in solution yields EIA CSMe5:2V(CD)2V((D) 2V yields the mullsocarbonyl complex Tieta-C5M3512Vimulocalizes on the leta C5H512V+ fragment lead to a high-Pilorbital on the leta C5H5+V+ folymont is observed. Photolysis of I as well as its thempel reaction with ⊃

COMPOUNDS CANADIUM SYNTHESIS CHEMISTRY, MOLECULAR STRUCTUPE ELECTRONIC STATES, CHEMICAL BONDS, CRYSTALS, PARAMAGUELTC MITERIALS STOUND STATE ELECTROSTATICS, TO FOUL BY STATE SELECTROSTATICS, TO FOUL BY STATE SELECTROSTATICS, ENERSELTC PURPHICAL SIS CHEMICAL STRY, *OPGANGMETALITC COMPOUNDS; *CARBONYL

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SEARCH CONTROL NO EVNSAR FIRT BIBLIOGRAPHA

SOLVANG BU BVP WOLZNIE F GARMOU F STANFORD UNI

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Final rept - Mar 84 Ze fab DESCRIPTIVE MOTE

APPLICATIONS, LIGHT PULSES PULSED LASERS
SHUTTERS:OPTICS), KERR MAGNETOOPTICAL EFF.GT. SHORT
PULSES. LASER COMMUNICATIONS. DATA RATE, HIGH RATE, DATA
LINKS, TIME DOMAIN, TUNABLE LASERS, GRATINGS(SPECTRA).
PHOTOTHERMAL PROPERTIES. ACOUSTOOPTICS, CHARGE TRANSFER

*EXPERIMENTAL DESIGN, *LASER

DESCRIPTORS

CONTINUED

AD A171 949

Picosecond Time, Femtosecond Time

Frequency Domain, PE61102F, WUAF0SR2301A1

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IDENTIFIERS

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Stegman A PERSONAL AUTHORS

F49520 84 C 0041 CONTRACT NO

2301 PROJECT NO

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TP 35 0723

UNCLASSIFIED REPORT

flexible, noncontracting method for making picosecond and based on ultrafast diffusion driven charge transport, its This program develops new technologies for exploiting the ultrafast data transmission and measurement capabilities of lasers and applies these new make ultrafast measuraments in the time domain, and also making ultrafast measurements without pulses, working in pulses in combination with novel detection mechanisms to measurements are made on chemical systems, including the The first picosecond photoacoustic detection as a sensitive and flexible bulk entinely new ulinafast photodetector concept is invented using a nevel tunable laser induced grating method for pulse time domain measurements are demonstrated using surfaces. A number of lifetime and damage studies are made semiconductor surfaces, and the formation of measurements with lasers, both using ultrashort light and surface detection mechanism in liquids and solids techniques to current scientific problems in physics, An. femtosecond measurements on a very wide variety of Several new spontaneous surface ripples or stimulated Wood's femtosecond resolution frequency domain lifetime the frequency domain. Using the latter approach, anomalies are explored picosecond laser pulses techniques are developed for making ultrafast experimental demonstration are being persued chemistry, and ultrafast electronics. important optical Kerr material CS ---ABSTRACT

AD A171 949

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DELL PEPUPT BIBLIDGRAPHY SEARCH CONTROL NO EVNS48

AD A171 946 14 2 20 S WISCONSIN UNIV-MADISON DEPT OF PHYSICS

FUL Experimental Research on Optogal Fracts
DESCRIPTIVE AFTE Rept for 1 Aug 84 i Jul 85.

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PERSONAL AUTHORS - Lawler J E

CONTRACT NO AFOSR 84 0298

PROJECT NO 2301

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MONITOR AFRSB TP 45 0512 UNCLASSIFIED REPORT

More adjusted under this grant are borrly described all are being used in organia grant are borrly described all are being used in organia geoperiments in research on discharge are reference of a gas discharge are reference of a gas discharge are reference of a gas discharge are referenced by allowing attention with addition at a discharge are referenced by allowing attention are discharged to an allowing reference or molecular are allowed as a reference of a gas discharged are are discharged and are are allowed are allowed as a reference or an area of the discharged are allowed as a reference are the discharged and are allowed as a reference or an area of the discharged area are the discharged as a reference or an area of the discharged area are the discharged as a reference or an area of the discharged area are allowed.

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FLORIDA UNIV GAINESVILLE SPACE ASTRONOMY LAB

(4) Interplanetary Dust and the Visible/Infrared Sky Background Radiation.

DESCRIPTIVE NOTE. Final rept 1 Apr 83-30 Sep 84.

JUL 86 21F

PERSONAL AUTHORS: Weinbeng, Jenny L.

CONTRACT NO ALGSR-83 0107

PROJECT NO 231

TASK NO A1

MONITOR AFOSR

IR -86-0687

UNCLASSIFIED REPORT

ABSTRACT - U. A multidisciplinary approach is developed to provide information on the optical and physical properties of interplanetary dust, its location in spacelits origin and dynamics, and its contribution to the astronomical background radiation in the informed This approach make; use of ground-based, Earth orbital and deep space pribe observations or zodiacal light, drivers in techniques to derive information on particle properities and distribution from zodiacal light observations, analysis of comet this observations, theoretical conditions and laboratory measurements of scattering by spheroids cylinders and dynamics.

DESCRIPTORS (U) (COSMIC DOST) (INFERPLANETARY SEAUL) OPTICAL PROPERTIES, BACKGROUND RADIATION, ZODIACAL (1944) SEY BRIGHTNESS, INFRARED SPECTRA COMETS DUST CLAUDS

IOENTESERS Ui Schwerman dust ards WUAFOSR2311A: PEG1177F

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UNDLASSIFIED REPORT

quasi-monotone systems. Quasi-monotonicity is not assumed Conditions are formulated which guarantee scheme which is not a generalization of the one used for positive measure. The main tools used are probabilistic the existence of positive solutions for simultaneous Markov processes, and an iterative systems on an open domain with each constant is a and new results are obtained potential theory <u>-</u> ABSTRACT

U MARKOV PROCESSES, 'SIMULTANEOUS POTENTIAL THEORY, DIFFERENTIAL EQUATIONS ITERATIONS, PROBABILITY, EIGENVALUES DESCRIPTORS EQUATIONS EILLIPSES

ELLIPTIC DIFFERENTIAL EQUATIONS DIRICHLET PROBLEM WUAFOSR2304A5, PE61102F = IDENTIFIERS

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Disapposities and Robus: Estimation When Iransforming the Regression Model and the Responses

Technical rept. Aug 85 Aug DESCRIPTIVE NOTE

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Ruppert David っ Carroll, R PERSONAL AUTHORS

MMS 1592 REPORT NO

F49620-85-C-0144, NSF-DMS84-00602 CONTRACT NO

2403 PROJECT NO

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UNCLASSIFIED REPORT

estimated by maximum likelihood. The MLE however is very sensitive to outliers. This article proposes diagnostics same transformation. This methodology, is called transform both sides has been applied in several recent then the transformation can be which indicate cases influential for the transformation regression parameters. We also propose a robust bounded influence estimator similar to the Krasker-Welsch In regression analysis, the response is often transformed to remove heteroscedasticity and/or transforming both the model and the response with the regression estimate. Both diagnostics and the robust untransformed response, than it can be presurved by estimator can be implemented on standard software papers, and appears highly useful in practice parametric transformation family such as power skewness. When a model already exists for the transformations is used, <u>_</u> (Author) ABSTRACT

SCRIPTORS (U) TRANSFORMA IONS(MATHEMATICS)
'ESTIMATES, REGRESSION ANALYSIS, MATHEMATICAL MODELS RESPONSE, PARAMETERS, DIAGNOSIS GENERAL MAXIMUM LIFELIHOOD ESTIMATION DESCRIPTORS

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SCARCH CONTROL NO. EVN54B WITH SEPTION RIBLIOGRAPHY

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7:3 21.2 AD-A171 937

CALIFORNIA UNIV LIVERMORE DEPT OF APPLIED SCIENCE

di Fundamental Study of Dense Fluid-Detonation

Annuil rept. 1 Apr 83-31 Mar 84 DESCRIPTIVE NOTE:

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Hoover, William G PERSONAL AUTHORS F45320 81 C 0050, ARPA Order 4017 CONTRACT NO

230F PROJECT NO

82 02 3551

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UNCLASSIFIED REP.

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uniavial and hydrostatic composition. These distributions The atomistic pair distribution function are compared to the productions of the Dastine Facility datobs woders. Simulated branches, an collisions of 1910h and 35center the 1960 to 3(8%) model 450 128 100 BOLEST 05 is determined for planar crystals undergoing both trantowing and Poxatomic planar Louismiles, unthi transfer and deformation tens a copies pale adding sports and a pevaritraborzeng in mind solita tie-ini robenzene APSTRACT

SSPIPTOPS OF OCTONATE WAVES CRYSTAL STRUCTURE INTRODUCENZOUSS, ENERGY TRACETOR COLECULAR ROTATION MALECULAR TIBRATION, PARTIC COLLISIONS MATHEMATICAL OF WAVES DETUNITIONS MODELS / OMIC PROPERTIES 24 ST P I P TOP S

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simulations and use in Finetic reaction models. The next intramplecular prongy transfers in reacting molecules in Methods using a realistic dense fluid equation of state. These Simulation the interatomic distribution function are two years and concentrate on reaction initiation and Peronation wave profiles are obtained formulated in collids, for companison with atomistic compression of solids suited to molecular dynamics are developed for simulating the rapid unlaxial profiles are compared to the predictions of the Simplifyed Zeidhlich Joh Neumann Doering model the splid phase

DETONATION WAVES, AMATHEMATICAL MODELS *HIGH EYPLOSIVES EYOTHERMIC REACTIONS RELAXATION TIME VIBRATIEN EQUATIONS OF STATE, CONTINUUM MECHANIC. COMPUTERIZED SIMULATION SOLID PHASES ENERGY TRANSPER DESCRIPTORS

Lennard Jones potential Zeldovich Von Neumann Doesang model Hugonoat curves WUAR 05R2396B2 IDENTIFICES PF61102F

S 0. AP 1.11 OF COPRELL UNIVERTHACA NO STRUCT OF APPLIED AND ENGINEERING PHYSICS

Wavelength Independent Optical Lithography

Annual rept 1 Sep 84-31 Aug 85 DESCRIPTIVE NOTE:

9 9

Lewis, Aaron PERSONAL AUTHORS:

AF0SR-84-0314 CONTRACT NO.

2306 PROJECT NO

82 TASK NO

TR-86-0558 AFOSR MONITOR

UNCLASSIFIED REPORT

Availabil ty: Document partially illegible

Implications for Super-Resolution Microscopy -- The transmission of light through an infinite slit in a thick perfectly conducting screen is investigated. The spatial distribution of the near-field energy flux is determined method for high resolution imaging, near field scanning optical microscopy (NSOM), has been developed. The coefficients calculated by this method are in agreement equations, which are solved numerically Transmission with those determined by an alternative formulation. (Near-Field Scanning Optical Microscopy (NSOM)--A new concepts governing this method are discussed, and the working NSOM instrument are described. Two distinct technical challenges encountered in constructing a characterized, highly reproducible, sub-wavelength methods are presented for the fabrication of well (Near-Field Diff, action by a Slit; through the formulation of four coupled integral apertures (Author) ĵ ABSTRACT:

DESCRIPTORS: (U) +LIGHT TRANSMISSIG.1 +MICROSCOPY
APERTURES, ENERGY, FLUX:RATE!, DIFFRACTION, OPTICAL
SCANNING, OPTICAL IMAGES, HIGH RESOLUTION, FLUTRESCENCE, NEAR FIELD

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AD JUST 935 CONTINUED

IDENTIFIERS UPSTATE, INSOMINENT Fold Sevening Option! Minimodes (26:102)

AD-A171 933 9/5 9/1

(U) Modeling of GaAs/AlGaAs MODFET Inverters and Ring Oscillators.

ILLINDIS UNIV AT URBANA COORDINATED SCIENCE LAB

JUL 85 5P

PERSONAL AUTHORS: Petterson, A. ; Moloney, M. ; Morkoc, H. ;

CONTRACT NO F49620 83-F-0021

PROJECT NO 2305

TASK NO C1

MONITOR AFOSR TR 85 0536

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in IEEE Electron Device Letters, vEDL-6 n7 p359-362 Jul 35

voltage range was modeled for the first time in a similar inverter chains is lacking and present designs are based obtained for small supply voltages less than or equal to are minimized. The devices exhibit under 10 ps switching transconfuctance degradation and large gate capacitance times both at 300 and 77 k with 77 K logic swing being fashion. These models were rised to simulate a chain of numerical solutions of the quartum mechanical problem this model agrees very well with experimental results voltage and load current. The maximum device speed is much larger. The results are in qualitative agreement inverters at 77 and 300 Kies a wide range of supply developed a simple and straightforward model for the capacitance voltage chanacteristics for a wide gate (1) Detailed understanding of the MODFET current voltage characteristics using results from obtained in our Tabonatory. High frequency gate where the effects of on ground rules developed by thial and error with the reported experimental results 1 V poth at 300 and 77 K.

DESCRIPTORS (U) (INVERTER CIRCUITS, (OSCILLATORS, FIELD EFFECT TRANSISTORS, (GALLIUM ARSENIDES, 'ALUMINUM GALLIUM ARSENIDE, MODELS, HETEROJUNCTIONS, DOFING, SEMICONDUCTORS, LOW NOTSE AMPLIFIERS, REPRINTS

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AD A171 905 17 2

CONNECTIOUS UNIV STORRS DEFT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

J Stability Analysis of Interconnected Random Access Networks

APR 85 461

PERSONAL AUTHORS: Merakos, L.; Georgiadis, L.; Bisdikian, C.

REPORT NO. UCT/DEECS/TR-86-6

CONTRACT NO. AFOSR-83-0229, NSF-ECS85-06916

PROJECT NO. 2304

TASK NO. A5

MONITOR AFOSR TR-86-0552

UNCLASSIFIED REPORT

interconnection of two multiple-access/broadcast networks, Considered are two ways of multiplexing the local traffic each of which connects a large population of bursty users and the internetwork traffic contention multiplexing and multiplexing, the bridge node uses the same random-access channel that the local users use, and therefore it the bridge node, and a random access channel, used by the them to the bridge node of the destination network via a multiplexing, the channel in each of the two networks is subdivided into a node subchannel, used exclusively by point-to-point I nk; the bridge node of the destination network places these internetwork packets in its queue participates in the contention. Under channel division internetwork packets from the local users and forwards via packaet-switched, random-access channel. In each network a station, called bridge node, receivers channel division multiplexing. Under contention for subsequent broadcasting to the local users. This document considers the

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SEARCH CONTROL NO. EVN54B DITC REPORT BIBLIDGRAPHY

> CONTINUED AD-A171 905

SCRIPTORS -U: *NETWORY ANALYSIS'management;
*MULTIPLE ACCESS, MULTIPLEXING, RANDOM /SCESS COMPUTER
STURAGE BURST TRANSMISSION, OUEUEINS THEORY, STABILLTY DESCRIPTORS

U. Packet switching, Internetworks WMAF0SR2304A5 IDENTIFIERS PEG1102F

7/5 7/4 AD-A171 904

NORTHWESTERN UNIV EVANSTON IL DEPT OF CHEMISTRY

(U) The Spectroscopy and Reaction Kinetics of Transient Spec es.

Final rept. 1 Jan-31 Dec 85, DESCRIPTIVE NOTE:

Weitz, Eric PERSONAL AUTHORS.

AF0SR 85-0099 CONTRACT NO.

PROJECT NO.

8 TASK NO

TR-86-0557 AFOSE MONITOR

UNCLASSIFIED REPORT

Availability: Document partially illegible

of transient specier. It is currently being used to study reactions of vinyl radicals and energy disposition in spectroscopy. The apparatus has a time response of 35 hase and a sensitivity of 10 to the 10th power melecules. through the DoD University Research Program. This diode laser system will be employed in an apparatus which will cc. The apparatus is capable of providing information on the structure, rates or reaction and rates of relaxation be used for studying transient gas phase species via IR A diode lasar system has been acquired CO s photoejected from metal carbonyl molecules. ABSTRACT: UI

'VAPOR PHASES, 'LASER APPLICATIONS, 'PHASE DIODES, TRANSIENTS, VINY, RADICALS ENERGY IN, ORGANOMETALLIC COMPOUNDS, CARBONYL COMPOUNDS, OARBONYL COMPOUNDS. 'INFRARED SPECTROSCOPY, 'REACTION DEFUSITI JN. RELAXATION DESCRIPTORS KINETICS STUDIES

PE61102F. WUAFOSR2917A3 <u>.</u> I DF NT I F I 'RS

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A HIGH TEMPERATURE GASDYNAMICS LAB STANFORD HMI.

illi Advanced Diignistics for Reacting Flows

VISUALIZATION LASER INDUCED FLUORESCENCE. MIE SCATTERING FLOW FIELDS. DIGITAL SYSTEMS LASER APPLICATIONS. FLAME SPRAYING. FIBER OPTICS. TUNABLE LASERS. INFRARED LASERS. ULTRAVIOLET LASERS. VISIBLE SPECTRA. THERMAL PROFERTIES.

PEG1102F, WUAFUSR2308A3

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IDENTIFIERS

RADIATION ABSORPTION, MODULATION

PLASMA DIAGNOSTICS, COMBUSTION,

CONTINUED

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DESCRIPTORS

Annual scientific rept - 1 Oct 84:30 Sep DESCRIPTIVE NOTE

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Hanson, R K PERSONAL AUTHORS

F49520-83 K-0004 CONTRACT NO

PROJECT NO

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TR 86 0633 AFOSE MONITOR

UNCLASSIFIED REPORT

Original contains color plates: All DIIC and NIIS reproductions will be in black and white. SUPPLEMENTARY NOTE

imaging in spray flames using planar Mie scattering (PMS); (3) quantitative velocity and pressure imaging using induced fluorescence and wavelength modulation techniques computer systems for high speed and high resolution recording processing and display of flow image data; (5) diagnostic techniques applicable to combustion and plasma (8) Jaser inferactions with plasmas and combustion gases; Progress is reported for the past year of species and temperature imaging using planar laser induced fluorescence (PLIF) (2) quantitative particle and 19. investigation of other new diagnostic concepts. flows Research topics include. (1) digital flowfield imaging, including temporally and spatially resolved fiber optic absorption/fluorescence sensors employing using rapid-scanning UV, visible and IR visible and IR laser sources for species variations of PLIF, (4) advanced solid state camera temperature and absorption lineshapes. . 7. plasma diagnostics utilizing laser an interdisciplinary program to innovate modern laser sources for absorption and fluorescence measurements, (6) laser wavelength modulation measurements of species, spec troscopy. ABSTRACT

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OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS 20/12 11/6 AD-A171 897 ANN ARBUR SUPERCOMPUTER ALGORITHM RESEARCH ~ 6 MICHIGAN UNIV AD A171 898

.U. Block-Oriented, Local-Memory Linear Equation Solution on the CRAY-2, Part 1 Uniprocessor Algorithms

2, 1 Jan 31 Mar 86

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Quarterly rept.

CESCRIPTIVE NOTE:

33P

APR 86

PERSONAL AUTHORS

CONTRACT NO.

(U) Strength and Structure of Gal-xinx as Alloys.

Faber, Katherine T.; Hirth, John P.

F49620-85-C-0129, ARPA Order-5526

5526

PROJECT NO

DESCRIPTIVE NOTE Interim rept

DEC 85 32P

PERSONAL AUTHORS CATAMAN, D. A.

REPORT NO SARL 9

CONTRACT NO A DSR 84 0096

PROJECT NO 2304

TASK NO AS

MONITOR AFRANTSR TR 85 0681

UNCLASSIFIED REPORT

SUBPLEMENTIAN NOTE - P esented at the SIAM Conference on Scientific a Parailel Computing (2nd) Held at Norfolk, VA on 18 Nov 85

ARSTIAIT OF Experience with the Toky 2 on the effects of common account speed and loading on performing monory speed and loading on performing the red of a noticentially a large advantage. The performings of a nimber of common and local memory of performing of components for the LU factorization of a dense systems of equations on the CPAY-2. Results a note Fortian and assembly forquage implementation in green Authorical

DESCRIPTORS OF THE ALGORITHMS, FUNDALITATIONS, LINEAR ALGEBRAIC COMPUTER APCHIFICTURE FORTPAN, ASSEMBLY LANGUAGES

IDENTIFIEPS (F. CRAY 2 Computers Uniprocessor Aigorithms

UNCLASSIFIED REPORT

TR-86-0639

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TISK NO MCNITOR ABSTRACT. (U) The strengthening effect of GaAs by indium additions is under examination. Solid solution strengthening by InAS4 solute units has been predicted and its studied via mechanical mersurements complemented by electron microscopy. In this second quarterly report, hardness measurements for three Ga1-xInxAs compositions from R. T. to 900 C are complete and the second stage of the experimental work, compression testing, as a function of temperature and strain rate, is underway.

DESCRIPTORS: (U) GALLIUM ALLOYS, FINDIUM, FARSENIDES, FSTRENGTH'MECHANICS: *MOLECL.AR STRUCTURE, SOLID SOLUTIONS: HARDNESS, MEASUREMENT, WAFERS, DOPING, SINGLE CRYSTALS, YIELE STRENGTH, SHEAR STRESSES, THERMAL SIRESSES, CRYSTAL GROWTH, HIGH TEMPERATURE, CZOCHRALSKI CRYSTALS, COMPRESSIVE PROPERTIES, TEST METHODS.

IDENTIFIERS (U) PEG1102F, WUAFUSR5526DO, LPN-0SURF-7549777717636

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Low-Temperature aptical Absorption is As a Gali

Grown by Molecular Beam Epitary

Molecular Beam Epitaky Binding Energies, WUAFOSR2303501. PEG1102F

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۲-Masselirk W っ Pearan P Henderson T., Morkoc H. PERSONAL AUTHORS

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2305 PROJECT NO

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TR 86-0535

UNCLASSIFIED REPORT

in Physical Review B, v32 n6 / NOTE Pub 15 Sep 85 SUPPLEMENTARY NOTE p3857 -3862

that observed in donor activation energies in n-type Alix) the first time in the absorption spectra of (Alixigail-x) As! epilayers with x or = 0.43. From this structure, free excition binding energies are determined. These energies display an x dependence qualitatively similar to composition range 0> or x L or x 1 The first experimental data concerning AlAs in the region of the Gammarsub 15>--Gammarsub 1c+ band gap are presented. The compositional dependence of threshold values of the optical transmission and photoluminescence data obtained A detailed study of optical absorption in at 3 K from molecular beam epitaxial layers. Absorption coefficient spectra are calculated for the entire alloy predictions Detailed exciton structure is observed for absorption coefficient agrees with current theoretical the (AlixiGailixiAs) alloy system is undertaken using -O -ABSTRACT

ARSENIDES, OPTICAL PROPERTIES, PHOTOLUMINESCENCE, ABSORPTION SPECTRA, EXCITONS, EPITAXIAL GROWTH, MOLECULAR BEAMS, CRYOGENICS, REPRINTS .ALUMINUM GALLIUM ARSENIDE, ALUMINUM DESCRIPTORS

Excitonic Structure, Optical Absorption . ⊃ IDENTIFIERS

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EVN54B SEARCH CONTROL NO. DITC REPORT BIBLIOGRAPHY

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OF LAHOMA UNIV NOPMAN DEPT OF PHYSICS AND ASTRONOMY

Ur Laser Bised Studies of Molecular for Dynimics in the Earth's Atmosphere

15 Jan 65 15 Jan 85 Final rept DESCRIPTIVE NOTE

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Miller Thomas M PERSONAL AUTHORS

AF0SR 85 0128 CONTRACT NO

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TR 86 0659 AFOJV

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purchased which consists primarily of an argon ion laser and a mind dye laken. It describes how this equipment is apparatus to study the photodissociation of positive and campoint are outlined being set up in conjunction with a flowing ifterflow This report lists the Hiser equipment regarings agreed or long and the protestachment of pegative voirs. Future uses of the ABSTRACT

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VIRGINIA UNIV CHARLOTTESVILLE DEPT OF MATERIALS SCIENCE

11/6

(U) The Use of Novel Processing Procedures for Improving Overall Fatigue Resistance of High Strength Aluminum Alloys.

DESCRIPTIVE NOTE: Annual rept. 1 Jan-31 Dec 84

. ا Starke, Edgar A. PERSONAL AUTHORS:

UVA/525643/MS85 101 AF05R-83 0061 CONTRACT NO

REPORT NO.

PROJECT NO

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TASK NO

TR-86-0627

UNCLASSIFIED REPORT

Recent studies by the Air Force have shown environmental conditions. Consequently, understanding the Specifically, this research will identify those mechanisms involved in the initiation and propagation of the desired microstructure for FCP resistance throughout overall fatigue resistance, i.e., resistance to both FC: the microstructure of high strength aluminum alloys for Since fatigue chack initiation is a surface result of fatigue (1). This high incidence of fat lunes prompted the new safe-chack-growth approach for the design of new aerospace structural systems. However the bulk. The objective of this program is to optimize microstructures for FCI resistance on the surface and chack growth behavior under a wide variety of load and phenomenon, the faligue properties may be optimized by fatigue cracks in metals is one of the key factors in accurate calculations require a knowledge of fatigue that 50° of all material failures in aircraft are a microstructural features that control the different through the use of new primary processing phenomenon and fatigue crack propagation is a bulk designing aircraft that are safe, efficient, and economical. Since fatigue crack initiation is a s production processes that develop the desired ABSTRACT

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incorporating trace features in a finished product aspects of tirgue and esteb ish methods for

AIRCRAFT PESISTANCE MICROSTRUCTURE RUDDINESS CPACKS FALUMINUM ALLOYS FORACE PROPAGATION GROWTH GENERAL HIGH STRENGTH FATIGUE MECHANICS DESCRIPTORS METALS

7475 ALUMINUM ALLOYS D IDENTIFIERS

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DEPT OF BEN-GURION UNIV OF THE NEGEV BEERSHEBA (ISRAEL) PHYSICS

U+ Optically Controlled Opening Switches

15 Aug 83-14 Aug 84 DESCRIPTIVE NOTE: Final rept

22P AUG Shuker, Reuben ; PERSONAL AUTHORS

AF05R-84-0157 CONTRACT NO

2301 PROJECT NO

A7 TASK NO

AF0SR TR-86-0686 MONITOR

UNCLASSIFIED REPORT

importance: b) the use of dye lasers according to the Raman scheme; c) Penning ionization in Hg/Ne and Sr/Ne(3) has been studied within the grant. A recent investigation the role of direct electron multistep ionization. The switch was proposed in the low cost grant. It should be mentioned at the onset that this work was limited by the budget and that its purpose was mainly to define the problems and establish feasibilities. A crucial stris a important process in the discharge it does not control it study of the plasma processes taking a major role in the opto-galvanic effect such as Penning ionization and sustaining the discharge. In investigating the nonlinear limitation, a few important steps were made: a) Delailed consequences are that although Penning Ionization is an optogalvanic effect to achieve laser controlled opening effect little progress was made other than formalizing direct electron impact inoization and their relative preliminary investigation of applying nonlinear optical effects in conjunction with the match of mutual virtual level. Within the budget and defining the problems. (Author) ABSTRACT: (U)

SCRIPTORS (U) *CPTICAL SWITCHING, *IONIZATION *PLASMA GENERATORS *QUENCHING, *LASER BEAMS, *PU.SED LASERS, DYE LASERS, METAL VAPORS, DYE LASERS, MERCURY ATOMIC ENERGY LEVELS, NEON, SWITCHES, STRONTIUM DESCRIPTORS

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AD A171 860 12/1

PITISBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

(U) Likelihood Principle and Maximum Likelihood Estimator of Location Parameter for Cauchy Distribution.

DESCRIPTIVE NOTE. Technical rept.

MAY 86 20

PERSONAL AUTHORS: Bailz D. Fuld. C.

REPORT NO TR 85-13

CONTRACT NO. F49620-85-C-004

PROJECT NO 2304

TASK VO. AS

MUNITOR: AFOSR TR-86-0602

UNCLASSIFIED REPORT

ABSTRACE - (I) In the literature of point estimation, Cauchy distribution with location parameters was often cited as an example for the finding of maximum 1 belibood method and hence the failure of likelihood principle in general Contrary to the above notion, we proved even in this case that the likelihood colour has multiple roots, that the assimum likelihood colouration has multiple roots, that the assimum likelihood colouration is an asymptotically outmal estimator in the Bahadur sense (Author).

DESCRIPTORS (U) MAXIMUM VELTHOOD ESTIMATION, ASYMPTOTIC NORMALITY, INECCO TIES, CAUCHY PROBLEM RANDOM VARIABLES MULTIVARIO (ANALYSIS NORMAL DENSTIVERONTIONS)

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AD A171 860

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PERSONAL AUTHORS 10, Shaw-Hwa | Wang Jane Ling |

REPORT NO UND STATISTICS 69

CONTRACT NO AFOSR 85 0268

PROJECT NO 2304

TASK NO AS

MONITOR AFRIGE TR 85 0839

UNCLASSIFIED REPORT

ABSTRACT Unities the purpose of this paper to further investigate the path dependent bivariate (multivariate) placestimator of CKF 1982; (Horvath 1983). For simplicity, we shall focus on the bivariate case. The multivariate case can be dealt with similarly. Two path-dependent PL estimators are introduced in Section 2 of CCKF 1982; We shall consider only one of them in this paper as the other can be treated with symmetric argument While this paper deals only with the multivariate random censoring model it is possible to extend the results to the multivariate competing risk models.

DESCRIPTORS (I) BIVARIATE ANALYSIS, ESTIMATES, PATHS, WEAK CONVERGENCE MULTIVARIATE ANALYSIS, MATHEMATICAL MODELS RISK CENSORSHIP

Infiniteles 377 *Product limit estimators, Bootstrap method Survival functions, WUAFOSR2304AS, PE61102F

FLORIDA UNIVI GAINESVILLE DEFI OF MATHEMATICS

 U) Constructing Marko, Processes with Random Times of Birth and Death

86 35P

PERSONAL AUTHORS: Getoor R P Glover Joseph :

CONTRACT NO. AFOSP-85-0330, NSF-DMS84-19377

PROJECT NO. 2304

TASK NO A5

MONITOR: AFOSR TR-86-0678 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Grant NSF-DMS83.

transition semigroup P(s/t) (x,dy) and an entrance rule m stransition semigroup P(s/t) (x,dy) and an entrance rule m s (m sub t) satisfying m sub s P(s/t) < or = m sub t. Kuznetsov constructed a measure o sub m on path space so that the coordinate maps are Markovian with semigroup P (s/t) and so that the process is born according to the entrance rule m. Kuznetosov's approach was a Kolimogorov type construction. The authors give a new approach based on standard Markov process theory and a new analytic proof of the decomposition of m as: m sub t = v(-infinity/t) + integral from C to infinity of (s/t) p(ds), where p is a finite neasure on R, and for each s, v superscript s = (vs/t) is an entrance law at s.

DESCRIPTORS: (U) (MARKOV PROCESSES, OPERATORS: MATHEMATICS), MEASURE THEORY, LIFE TESTS

IDENTIFIERS: (U) Existance theorems, Uniqueness theorems, Birth and Death processes, Lebesgue measure, PE61102F, WDAF0SR2304A5

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*VISUAL PERCEPTION, *COMPUTER OPERATORS

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DESCRIPTORS

CSICK Computer Program

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NEW YORK UNIT

THRESHOLDS: FHYSIOLOGY: DISPLAY SYSTEMS, MOTION
PERFORMANCE: HUMAN: SINE WAVES. CATHODE RAY TUBE SCREENS its es et Visual Unithe Permontion of the Higher Der Motion

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and pure successions a or office to permit conduct THOSE THORIDES! Pas taction deregains ters research effort and Profession mates of arre found aprilation include Mende, we do issue a note stimulus Tomposed of sine wave gratings that smilt at a average specifical of the display. The specific variable data γ or eliopities at that introducing apply that on and jens of the great a brief recipt of the titeralung studied during This report Cesembes incorpetical work THE ON LABORATE rparan industry no povids ar 8/8/1 Subin an vicelerition. 14-11-12 that look in particular or realist Organia da We also pontra e constitution propression compartitions of the formal forms of compartitions. with process of supersymptons and or adoptan seed of carryings; set to speed in spec ing sim is to the turned to respec-This 00 and instance for detecting either changes in direction Direct uc a your woodeste of a . + Tie 10 1 State a state of the state of franchi y ye succession of freedy 1.01.6 1.000 The state of 1 346. 15 with for 1000 : ; ī

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SOCIETY FOR THE CIPIA, AND APPLIED MATHEMATER PHILADELPHIA FO

Held in Sitrepundh Pennsylvania on 24-26 June 1985 Symposism on Charging Areas in Applied Mathematics

Final rept DESCRIPTIVE NOTE

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TR 46 0636 FOSP MONITOR

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Emerging Areas in Applied Mathematics held in conjunction applications scientific computing, and optimization. The meeting was very successful, with a total attendance of robotics nonlinear partial differential equations and with the SIAM 1985 Summer Meeting, June 24 26 in Pittsburgh Populaylyania Eight invited speakers gave talks in four broad areas of applied mathematics. This project approved the Symposium on more than 400 including representatives of 8 nations Luthor ABSTRACT

ROBOTICS, NUNCINEAR DIFFERENTIAL EQUATIONS, PARTIAL DIFFERENTIAL EQUATIONS COMPUTATIONS OPTIMIZATION 'APPLIED MATHEMATICS, SYMPOSIA, DESCRIPTORS

WUAFOSR2304A3, WUAFOSR2304A2, PE51102F \exists TOENTIFIERS

20 11 AD A171 851 FOZIN BOGDANOFF AND ASSOCIATES INC

Fatigue Crack Growth, and Wear for Durability Assessment (U) B.Model Approach to Fatigue,

DESCRIPTIVE NOTE: Final technical rept 1 Mar 82-28 Feb

10P

Bogdanoff, John L. , Kozin, Frank PERSONAL AUTHORS.

F49620-82-C-0036 CONTRACT NO.

2303 PROJECT NO

82 TASK NO

TR-86-0661 AFOSR MONITOR

UNCLASSIFIED REPORT

been suggested for adaptive updating of a model of cumulative damage based upon service information to improve the accuracy of maintenance procedures to achieve for a chack to increase a specified amount. Two potential investigated. It was found that the weakest link idea was statistical analysis has been made of the fatigue crack growth process. Much has been learned about this process acceptable cumulative distribution functions of the time a prescribed reliability. Based on the data, the effect probablistic models have been suggested and an initial investigation has been carried out. A methodology has not applicable as a model and an acceptable model was Based upon available data, a detailed including it's history dependence, and the class of of increase in length on the fatigue life was proposed. (Author) ĵ ABSTRACT

*STATISTICAL ANALYSIS, MATHEMATICAL MODELS, WEAR, MARKOV PR CESSES, PROBABILITY DISTRIBUTION FUNCTIONS *CRACK PROPAGATION, *FATIGUE LIFE ĵ DESCRIPTORS

B models, PE61102F, WUAFUSR2302B2 [DENTIFIERS (U)

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on Intrampledular Energy Relaxation of Diphenylcarbene Picosecond Laser Studies of the Effects of Reactants Reaction of Diphenylcarbene with Alcohols.

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[Ersenthal] Sitzminn, E. v., Langan, d. G. PLR TONAL AUTHORS ش بد

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above channel but also aparet amplecular derive channel which is done to a solvent poor ity effect. These channels Stords apply dynamics of singlet diphenylcarbone (10PC) in the prevence of readtive molecules. As a complified by the relations of 10PC with alreadistic it is found that Treatiste mensuales provide 4410 with not only a chemical site decombanical different columnts, obtained by direct in the singlet state lifetime upon addition or reacting molecules. The absolute relation rate constants or spin lending theoret results such a significat increase agricult of the intrimpleduism and intermoleguism ABSTRACT - 10 Picosecond liser induced fluorescende Peasunoments provide for the first time the direct and physical effects can act to opposite directions Measurements are also reported DISCUSSER INFOCED FLUORESCENCE - PROCESSIONE STATES PRITAMATION CARBENE PHENYL RADICALS
PREADTICM FINETICS PEACLANIS-CHEFISTRY ALT HOUSENIS PRIFACIONE FALECULE INSERMITONS SHULLINIS POLABITY REFRINTS OF SURTHINES

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Theometical and (bsemilitional Studies of Gravity Wave Evertation Propagation and Dissipation

DESCRIPTION NOTE Final rept. Apr 82 May 85.

MAY 86 23P

PERSONAL AUTHORS: Fritts David C

CONTRACT NO AFOSR-82-0125

PROJECT NO 2310

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MONITOR AFOSR TR-85-0583 UNCLASSIFIED REPORT

instability theory with turbulence produces at that site in the wave field where the motion is most unstable. Mave contributing to our understanding of apparent differences wave field instabilities, the self-accelerations of large propagating waves by unstable shear layers and found that the monthnear interaction of examescent unstable modes is ventical motions to ventically propagating gravity waves. evolving gravity wave spectrum throughout the atmosphere Additional theoretical studies addressed the turbulent several aspects of gravity wave excitation, propagation, and dissipation that are expected to be important in the Important findings include an amplitude limit imposed by transport of hear and constituents and the induced mean and the atmosphere. Initial studies addressed the excitation of Observational studies revealed wave amplitude motions which may greatly expand the phase amplitudes were seen to be near saturation value and easily descrived by a simple saturation model of the Research under this grant focussed on propagation and saturation in the middle atmosphere field dynamics to be langel, consistent with linear an efficient source of such motion. Other mumerical studies examined the consequences of gravity ware speed distribution of mesospheric wave motions. between observations and modeling results feld instability ABSTRACT

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PAGE 270 EVN548

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Pandom Circles and Fields on Circles

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O Cinlar, Erhan Wand, v. PERSONAL AUTHURS

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TR 86:0951 AFOSB MUNITOR

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Prepared in comparation with Dept of Civil Enginearing DION ABVINDMENG OF Princeton Univ

The aim is to describe the exact shipes of stockastroally continuous ration field When the noise is stationary Gaussian mandom toold on the dingle. A similar shabes are modeled as random fields whose parameter spaces are the intended shapes. A specific random fields on a true sincle is introduced with exponential smeathing. objects that were meant to be circles or cylinders The of condom noise on the direte with stationary and tier on te mase, the result as the unique continuous detanttion for cylinders viets infinite dimensional incopolicat increments The north is a stationary Ornstein Uhlenbeck processe. . D ABSTRACT

SCRIPTOR -UP MATHEMALL ANALYSIS *CIRCLES *** MEKSURE THEORY, CLEARANCES PRECISION, SPHERES, CYLINGRICAL REDIES SHAPE VARIATIONS, SEPARATION SET THEORY MARKOV PROCESSES DESCRIPTOR

MENTILERS UP Ornstein Unlembeck Processes Leav Moaso o PESIIO2 WUAFUSE2304AS SHITTING

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PERSONAL AUTHORS - Popular Michael J. Merz Kenneth M. Un

CONTRACT NO 143520 NO C 0024, NSF CHESS 17948

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TASK NO 82

MONITOR APTICE

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UNCLASSIFIED REPORT

SUPPLEMENTAR: NOTE: Public of the American Chemical Society (107 part) 6112 1985.

> Azulene to map! thalene. Here we report a theoretical stud, which has provided further insight into were fully optimized (mansition states (TS) located, and All geometries UMND0: for biridical or open shell ones, as implemented The calculations were carried out using MNDO for closedstationing policy chinacterized, by procedures included shell species and the spin unrestructed version of MNDO the solution of this long-standing mechanistic problem in Morac The effermetecular mechanisms that have been suggested and il We First According to a recent review, no single mechanism vet proposed can adequately account for the collociated the production energy (E sub a) for the mechanism can have an scholar Π in the MRPAT pickige of computer programs . Garandalkalık el PRSTPACT

DESCRIPTORS OF CAZULENES, CHAPMALENES, CHEMICAL PEACTIONS CONTROLM CHEMISTRY, MOLECULAR STRUCTURE SPIN STATES, IPANJITIONS, MOLECULE MOLECULE INTERACTIONS ACTIVATION EMPRICY CLEAVAGE REPRINTS.

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CALIFORNIA UNIV RIVERSIDE DEPT OF STATISTICS

Use On a New Graphical Method of Determining the Connectedness in Three Dimensional Designs

DESCRIPTIVE NOTE Interim rept

DEC 85 1

PERSONAL AUTHORS: Ghosh, Subir

REPORT NO. TR-138

CONTRACT NO AFOSR-86:0048

PRUJECT NO 2304

TASK NO A5

MONITOR: AFOSR

TR-86-0722

UNCLASSIFIED REPORT

ABSTRACT: (U) In this paper we study the connectedness of 3 dimensional designs by reducing the dimension of designs from three to two. A new graphical method of determining the connectedness of designs is presented. The method is easier and simpler than the earlier known methods of Birkes, Dodge and Seely (1976) and Srivastava and Anderson (1970). A generalization of this method for 4 or higher dimensional designs is also discussed.

DESCRIPTORS: (U) (MATHEMATICAL MODELS, GRAPHICS, TWO DIMENSIONAL, CONTRAST, PATHS ADDITION, CLASSIFICATION, PARAMETRIC ANALYSIS

IDENTIFIERS (U) Connectedness Additive Models.
Equivalence Classes, WUAFOSR2304A5, PE61102F

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Platteville radar Stratespheric

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Sulfate/Sodium Dodecyl, PE61102F,

WUAF0SR2303B2

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DEPT OF CHEMISTRY NEW YORK COLUMBIA CNIV

Polymerization Effects of Lanthanide Ion Addition, Magnetic Effects on Photoinduced Emulsion څ

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Turno, Nicholas J. ; Arona, Kartar S. PERSONAL AUTHORS

AF05R-84-0040 CONTRACT NO

2303

PROJECT NO

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TR-85-0738

UNCLASSIFIED REPORT

in Macromolecules, v19 n1 p42-46 Pub SUPPLEMENTARY NOTE

on the reactions of geminate triplet radicals in micelles. The presence of salts caused an increase in the size of Significantly prevented at 0 G in the presence of La(3+). Gd(3+), or Mg(++). At 2000 G good yields of high molecular weight polystyrene were obtained in the presence of La(3+) or Mg(++) but polymerization was of magnetic field on photoinduced emulsion polymerization was counteracted by the presence of Gd(3+). The surfactant and dibenzyl ketone (DBK) as an initiator was significantly prevented in the presence of Gd(3+). These micelles, which in turn resulted in a reduced efficiency of free-radical escape from the micelles, and the effect salt effects on miceliar structure and magnetic effects unaffected by the addition of these ions in the absence results are explained on the basis of a combination of Photoinduced emulsion polymerization of polymerization of methy! methacrylate was found to be styrene with sodium doderyl sulfate (SDS) as the or presence of external magnetic field ABSTRACT

*PHOTOCHEMICAL REACTIONS, *LANTHANUM, EMULSIONS, MAGNETIC FIELDS, ADDITIVES, LANTHANUM COMPOUNDS, MAGNESIUM COMPOUNDS, CHLORIDES, SALTS 'POLYMERIZATION, *STYRENES ē DESCRIPTORS

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DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD A171 806 7 4

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

(U) Theory or Reactions at a Solid Surface,

33P

PERSCHAL AUTHORS George Thomas Follow villung Munphy William Gorbuconnson Michael Lee Prinson

CONTRACT NO AFOSR 32 0046, NSF CHERS 22874

PROJECT NO 270

TASH NO B3

MONITOR AFRSP TR 37:0555

UNCLASSIFIED REPORT

SUPPLEMENTARy NOTE Pub in Theory of Chemical Reaction Dinamics (4 p.133-154-1945)

ABSIPACE to Theories and computational procedures are reviewed for processes involving bord proving and furnation to solid surface. These processes include reactive solitoning recombination adsorption and description. The article ends with a discussion of theoretical techniques for describing boy some of the above parchases are induced or modified by laser radiation.

DESCRIPTORS U CHEMICAL BONDS REALTION FINETICS OF SORPTION COSCIPPING RECOMBINATION PRACTIONS LASER PUMPING ELECTRON TRANSFER QUANTUM THEORY PERPINTS

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

 (U) Potential Energy Surfaces and Tunnelling Dynamics of some Jahn-Teller Active Molecules,

.5 8P

PERSONAL AUTHORS: Dewar, Michael J. (Merz, Kenneth M. . Jr.)

CONTRACT NO. F49620-83-C-0024, NSF-CHE82-17948

PROJECT NO. 2303

TASK NO B2

MONITOR: AFOSR TR-86-0612

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in dnl. of Physical Chemistry v89 n22 p4739-4744 1985

ARSTRACT: (U) Potential energy surfaces and rates of tunnelling have been calculated for degenerate rearrangements of cyclopropane radical cation, cvclopropenyl radical, cyclopropenyl anion, and cvclooctatetraene, using MNDO or MNDO/HE/CI. Heavy atom tunnelling (HAT) plays an important role.

DESCRIPTORS: (U) 'TUNNELING RATIS CYCLOPROPANES, CYCLOOCIATETRAÉNE, ISOMERS POTENTIAL ENERGY, SURFACES, I' FOLLAR ISOMERISM, CONVERSION, ORGANIC RADICALS, CATIONS, ANIONS, MOLECULAR OFFITALS, MOLECULAR VIBRATION, MOLICULAR STATES, REPRINTS

IDENTIFIERS. (U) HAT/Heavy Atom Tunneling), Jahn Teller effect, Cyclopropenyls: Potential energy surfaces, Interconverting isomers, Bond switching, PE6:102F, WUAFOSR2303B2

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Rastog: Prabhat K Printts David C PERSONAL AUTHURS

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UNCLASSIFIED REPORT

Pub in Radio Science v20 n6 p1247-SUPPLEMENTARY NOTE 1277 Nov Dec 95

or associated with low-frequency wave motions. The most common dynamical instability is the Kelvin-Helmholtz (KH) Dynamical and convective instabilities are as a series of 8H billows. Convective instabilities occur dissipation of larger-scale motions and the generation of instability which is often main'ested in the atmosphere minimum of the static stability either in the mean flow where the lapsg-rate becomes superadiabatic through the high frequency wave motions. This paper reviews the theory and the observational evidence for both types of gravity waves and appear to predominate for normally due enhanced velocity shears and or a local two mechanisms that contribute significantly to the turbulence in the middle atmosphere. The former are instabilities in the lower and middle atmosphere. <u>-</u> action of ABSTRACT

MESOSPHERE TROPOSPHERE GRAVITY WAVES.
CONVECTION ATMOSPHERIC: THERMAL INSTABILITY, PRANDTL ATMOSPHERIC MOTION, ATURBULENCE NUMBER REPRINTS DESCRIPTORS

Felvin Helmholtz In Stability Richardson Number PES:102F, WUAFOSR23:10A1 IDENTIFIERS

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PRINCETON UNIV NU DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

 Unit Improving Resolution for Autoregressive Spectral Estimation by Decimation.

JUN 83

Quirk, Maureen P. ; Liu, Bede PERSONAL AUTHORS:

AF05R-81-0185 CONTRACT NO

PROJECT NO

ΑG TASK NO

TR-86-0644 **AFOSR** MONITOR

UNCLASSIFIED REPORT

and Signal Processing, VASSP-31 n3 Pub. ir IEEE Transactions on Acoustics, Speech, SUPPLEMENTARY NOTE:

efficiently improving the resolution of autoregressive spectral estimation algorithms. We derive the exact This paper presents, a method for p630-637 Jun 83 ĵ

additive white noise. From this equation resolution boundaries are constructed which give the resolution in terms of the model order and ther signal to noise ratio order M yields the same resolution as a model order MD Simulation results are used to compare the resolution used with the undecimated signal, and that decimation boundaries for decimated and undecimated spectra. Our results demonstrate that decimation by D with a model autoregressive spectrum for K complex sinusoids in reduces the computation. DESCRIPTORS: (U) +5°ECTRUM ANALYSIS, +REGRESSION ANALYSIS, S'GNAL PROCESSING, WHITE NOISE, SIGNAL TO NOISE RATIO, ALGORITHMS, POWER SPECTRA, REPRINTS

IDENTIFIERS: (U) Bung Algorithm, Additive Noise PE61102F, WUAFOSR230446

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	DEPT OF OPHTHALMOLOGY AND VISUAL
ନ 16	NEW HAVEN OT
AD A171 787	YALE UNIV

Alkyl lodides and F-Aryl Bromide and Cadmium Metal, Preparation of F-Cadmium Reagents Directly from F-(U) Two Dimensional Sampling by the Patrice SCIENCE

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Hirsch, Joy : Hv! ton Ron PERSONAL AUTHORS

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U A dispursion of some by in two dimensions apparent frequency and orientation of a grating. Further, orimitation and is higher than the court estreate of 60 and its implications for vision in proceeded. We show in demonstrate that the Nyquist Common depends on that aliesing in two dimposions will grange both the ABSIBACT

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UNCLASSIFIED REPORT

IR-86-0654

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MONITOR TASK NO

32

Heinze, Pamela L.; Burton, Donald J.

2302

PROJECT NO.

PERSONAL AUTHORS:

of Fluorine Chemistry, in Ga Pub v29 p355-261 1985. SUPPLEMENTARY NOTE:

prepared via the direct reaction of F-alkyl iodides with reaction of bromopentafluorobenzene with cadmium powder rapid easily scaled up, one-pot procedure to these valuable synthetic reagents from commercially available Fralkyl cadmium reagents can be readily in DMF at room temprrature affords the F-aryl cadmium reagent in excellent yield. This approach provides a cadmium powder in DMF at room temperature. Similar í precursors ABSTRACT

SCRIPTORS (U) *ORGANOMETALLIC COMPOUNDS.*FLUORINATED HYDROCAREONS.*CADMIUM COMPOUNDS, 'SYNTHESIS.CHEMISTRY), ALKYL RADICALS, IODIDES, POWDERS, ARYL RADICALS, BROMIDES ROOM TEMPERATURE, REPRINTS DESCRIPTORS

Formamide/Dimethyl, PE61102F, WUAFOŚR2303B2 Cadmium Reagents, DMF (Dimethy) ĵ Formamidel IDENTIFIERS.

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PERSONAL AUTHORS Griswoold,N.C., Halverson,D.R.

CONTRACT NO AFOSB 31 0047

PROJECT NO 2304

TASK NO AS

MONITOR AFOSP TR 85 0523 UNCLASSIFIED REPORT

SUBPLEMENTARY MOTE. Publish Proceedings of the Conference on Information Sciences and Systems, p172-176-27-29 Mar

ABSTRACT - U This document presents an easily implemented alternative scheme for image compression which allows exploiting some componly encountered image characteristics. This approach admits the possibility of improved performance and enhanced compression ratios when compared to block truncation coding. The application of the algorithm is illustrated by various example images, and it is seen that the results also have the surprising consequence that the algorithm can restore certain images with no alteration whatspeaver and yet still achieve reasonable compression ratios. (Author)

DESCRIPTORS (1): (DA)A COMPRESSION, (IMAGE RESTORATION IMAGE PROCESSIVE ALGORITHMS, TRUNCATION PEPRINTS

IDENTIFIERS U FEGLIOZE WUAFOSR2304A5

PENNSYLVANIA UNIV PHILADELPHIA

J. Molecular Nonlinear Optics Nonlinear Optical Processes in Organic and Polymer Systems.

85 4P

PERSONAL AUTHORS: Garito, A F ;

CONTRACT NO. AFOSR-84-0135

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PROJECT NO. 2303

TASK NO. A3

MONITOR: AFOSR

TR-86-0607

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Plastics 85, Proceedings of the SPE Annual Technical Conference and Exhibition (43rd) p421-423 1985.

exceptionally large nonlinear optical susceptibilities in applications in future opti al telecommunications, image phenomena, the recent demonstrations of phase conjugated intriguing phenomena suggest a wide variety of potential nature of electronic excitations and their interactions. As natural developments in studies of nonlinear optical accelerated and enlarged through fundamental studies of advances in nonlinear optical research can be rapidly nonlinear optical responses of organic and polymeric structures and the fundamental understanding of the We believe the recent relations and origins of nonlinear processes to the This review concerns the macroscopic switching and processing data storage, and optical activities in centers throughout the world. These reconstruction, integrated optics, optical signal organic and polymeric materials have stimulated considerable growth in research and development wave generation, optical bistable states and organic and polymer crystals and films memory and logic technologies ĵ ABSTRACT:

DESCRIPTORS (U) ORGANIC MATERIALS, OPLYMERS, OPTICS, MOLECULAR STRUCTURE, OFTICAL PROPERTIES, ELECTRONIC STATES EXCITATION, INTERACTIONS COPYSTALS, FILMS

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IDENTIFIERS U PERIOZF, WUAFOSR2303A3

ULTRASYSTEMS INC IRVINE CA

7/2

(U) Reactions of Perfluoronitriles, II Interactions with Phenylphosphine.

35 19P

PERSONAL AUTHORS: Pactorek, K. J. (Nakahara, J. H. (Kratzer) R. H.

CONTRACT NO. | F49520 82 -C- 0021

PROJECT NO 2303

TASK NO 92

MONITOR AFDSR 1R-85-0616

UNCLASSIFIED REPURT

SUPPLEMENTARY NOTE: Fub in Unl of Fluorine Chemistry. v30 p269-287-1985. See also AD-A171-739

Depending on reaction conditions, products. Secondary phosphorus free products, some formed TRESCALTS RECH-NH RECHANIZAP CONSTITUTE RECHIP CONSTITUTION CHREE and with phenylposphine gave tetraphenyltetraphosphine and a spectrum of reduction and interaction products. Fifteen RECH2N-CRENHCH2RE, and RECH2N-CRENHCRET-INH: Only three proferentially produced. All the structure assignments Treatment of perfluoro-m-octanomitrile are based solely on mass spectral breakdown patterns and the amine, RFCH2NH2, were the primary reduction specific phosphorus-containing compounds could be phosphorus containing materilis were definitely following ammonia evolution, were the following RfCH-NCH2PF RfCH2CH1NH2PP, PfC+NH3NCRF(NH2), RECHANGER - MH . . I RECN 13. RECH NORF-NORE - NH . since pure compounds were not isolated compounds were identified The mine. RECEINNER CONTRACTOR i Jentified. ABSTRACT

DESCRIPTORS. (U) INTRILES, FLUORINE COMPOUNDS.
FRUISPHINE, FPHENYL RADICALS, FCHEMICAL REACTIONS
CHEMICAL DERIVATIVES, IMINES, AMINES, PHOSPHOPUS,
ADDITION REACTIONS, SOLVENTS, MOLECULAR STRUCTURE, MASS
SPECTRA, REPRINTS

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ALASEA UNIV. FAIRBARES GEOPHYSICAL INST

Comparison of Mesospheric Wind Spertra with a Gravity Wave Model

DFC 85

Smith, Steve A. Fritts, David C VanZandt, Thomas E PERSONAL AUTHORS

AF0SR 82-0125 CONTRACT NO

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TR - 86 - 0665 AFOSR MONITOR

UNCLASSIFIED REPORT

Pub in Radio Science v20 n6 p1331 SUPPLEMENTARY NOTE. 1338 Nov Dec 85

specifical have amplitudes that are within a factor of 3 of each other and appear to follow power laws with exponents in the -2 to -2.8 range. In order to infer what portion oblique (15 deg. zenith angle) beams measured at heights of 12:88 km during summer. The oblique wave number model of VanZandt like absorvations are found to be consistent with model suggesting that gravity waves are the dominant motion in the high latitude summer (U) Radial wave number spectra are presented of the spectral amplitude can be attributed to gravity stratosphere troposphere (MST) radar running in a high waves, the ratio of oblique to ventical amplitudes is compared with the ratio predicted by the gravity wave for wind fluctuations obtained from heights near the radial wind fluctuations along one vertical and two spatial resolution mode (300 m). The spectra are of mesopause by the Poker Flat Alaska, mesosphere ABSTPACT

WAVES, ARCTIC REGIONS, SHAMER SPECTRUM ANALYSTS, RADAR GRAVITY *WIND VELDCITY *MESOSPHERE; SIGNALS REPRINTS . .] DESCRIPIORS

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7.4 D A171 755 SRI INTERNATIONAL MENLO PARK CA CHEMICAL KINCTICS DEPT

(U) Reaction of CF3 Radicals on Fused Silica Between 320 and 530 K

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Σ Rossi, M. J. Golden D. Selamoglu M PERSONAL AUTHORS:

F45620 83 K-0001 CONTRACT NO

2303 PROJICE NO

9 TASK NO

TR-86-0609 AFOSR MONI OF

UNCLASSIFIED REPORT

in del of Chemical Physics gn_d n4 p2400 2407, 15 Feb 86 SUPP.EMENIARY NOTE:

from CF3I by CO2 laser photolysis, and the subsequent gas conditions. The nates for the irresemble surface loss of CPS, and for the formation of CQ were both first order spectroscopy. The sunface nevertion was found to yield CO on the silveon oxide surface was largely responsible for HF. CO2. COF2, and SiF4. It is found that H20 residing defended to CF3. These were found to be temperature defended with E sub a approx 7.7 and 7.5 keal, mol - Michin as functions of sunface temperature (320-530 F) and CF3 concentration. The CF2 radicals were generaled the exygen and hydrogen constroining products, and that sold the side occurred image the side occurred image them respectively. The GF3 surface loss rate indicates this Stitcon oxide ifused silical surface was studied in a Very Low Pressure Photolysis flow reactor Lapprol of between 0 cold 0 017 for the temperature range of this the sticking coefficent for this radical on quartz is The reaction between GF3 radionic phase reaction products were followed by mass n D ABSTRACT study

DESCRIPTORS (U) FLUORINATED HYDROCARBONS, (SURFACE CHEMISTRY) (FUSED SILICA) SURFACE TEMPERATURE
REACTIVITIES MASS SPECTROSCOPY FREE RADICALS, REACTION

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PRINCED WHEN THE ORDER OF CONTRICAL ENGINEERING AND COMPOSER SCIENCE

An Iterative Algorithm for cocating the Minimal Engenyector of a Symmetric Matrix

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PERSONAL AUTHORS - Fubricann Daniel R., Liu, Bede ;

CONTRACT NO AFOSR 81 0186

PROCECT NO 2304

TASK NO A6

MONITOR AFOSR TR-86-0642

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SUPPLEMENTARY NOTE Pub in IEEE International Conference on Acoustics, Speech, and Signal Processing, p45 R 1 through 45 B 4 1984

ABSTRACT: (U) A new iterative method of finding the minimum eigenvalue of a symmetric matrix is described. This method does not utilize matrix inversions and is applicable to any matrix. R for which the matrix vector product Rx is rapidly computable. It seeks the minimum eigenvalue of R by minimizing the quadratic form XitransposediRx on the unit hypersphere, using a search technique derived from the conjugate gradient method. The computational complexity of each step of the algorithm depends on the speed with which Rx can be computed.

DESCRIPTORS - U - - MATRICES MATHEMATICS - - FIGENVALUES. ITERATIONS - SOLUTIONS - GENERAL SYMMETRY - REPRINTS

IDENTIFIERS (U. Conjugate grudient method PES1102F) WUAF0SP2304A6

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Pub in Jal of Fluoring Chemistry SUPPLEMENTARY NOTE V30 p241-251 1985

n octylamidine as well as the diphenyl analogues of the last two compounds. The reaction mechanisms infrared and this ipentiuono nihoptyl is thiazine. Niphonyl penfluono resct with aniling both in the absence and presence of solvents. A spectrum of products was formed including Perfluoro-n ectanonitrile was found to mass spectra are discussed ABSTPACT UN

SCRIPTORS UP INTIRILES FELUORINE COMPUNDS INTLÍNES, CHEMICAL REACTIONS SOLVENTS AMIDINES PHENYL RADICALS ANALOGS INFRARED SPECTRA MASS SPECTROMETRY, GAS CHROMATOGRAFHY, REPRINTS DESCRIPTORS U.

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PRINCETON UNITED NO DEPT OF ELECTRICAL ENGINEEPING AND CHAPULER SCIENCE

Decomption in Discrete Time Band-Limited Signal U - On the Use of Singular Value Decomposition and Extrapolation

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Photoelectron Spectrum of Benzyne 40

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

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Dewar, Michael J., Tien Ize Pei PERSONAL AUTHORS

F49620-33-C 0024 CONTRACT NO

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TP 86 0611 AFOSR MONITOR

UNCLASSIF.ED REPORT

of the Chemical Society Pub. in Jnl. SUPPLEMENTARY NOTE:

Chemical Communications, p1242-1244 1985

ABSTRACT: (U) The u v. photoelectron (UPE: spectrum of benzyne prepared by flash vacuum thermolysis of phinalic spectra of the products from pyrolysis of rodobenzene, corresponding to benzyne were not observed in the UPE anhydride or indantrione, is reported, bands or benzoyl bromide di-iodobenzene

SCRIPTORS (U) (UNSATURATED HYDROCARBONS, CYCLIC COMPOUNDS (PHOTOELECTRON SPECTRA (ULTRAVIOLET SPECTRA THERMOCHEMISTRY, PYROLYSIS PHTHALATES ANHYDRIDES. DESCRIPTORS (U) REPRINTS

*8enzyne, Indantrione WUAFUSR230382 IDENTIFIERS PE61102F

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TOWA UNIV TOWA CITY DEPT OF CHEMISTRY

A Remarkably Simple Preparation of (Inifluoromethyl) cadmium and -Zinc Reagents Directly from Difluorod halomethanes

PERSONAL AUTHORS - Burton, Donald J. Wiemers, Denise M.

AF135R-85 0009 NSF CHERS 40713 CONTRACT NO

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SUPPLEMENTARY NOTE: Published to the American Chemical Society V.O" p5014 5015 1985

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without TVI has been used to study the sylemenization of impose in this enougher smith The results suggest one or symmetrical transition state but in two chaps, carried place transfer of a single proton. The first cate date place by should be a sent the property of the analysis of the sent Commonweal molecular ambital MG submittered by assetted tunnelling VAT P.C.C. LOCK

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Stinnylenes An MNOO Impactigation

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F49620-83-C-0024 CONTRACT NO

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TR 85-0510

UNCLASSIFIED REPORT

54 n10 p1784 in Organometallics. du q SUPPLEMENTARY NOTE 1787 1945

include insertion into carbon halogen or tin-halogen bonds polymerization, and cheletropic cycloadditions As place either via free stannylenes on through stannylenoid studies of tin compounds have led to satisfactory results references to the organic chemistry of timill compounds processes using the MNDG SCF MO mode: MNDG parameters preparation have been refuted. In recent years, however in the case of divalent carbon, the reactions may take stannylenes has emerged. The reactions so far reported halides have been well characterized and MNDC studies them reported, organotini Π , compounds have remained and extensive stannylenes, remain sparse. While the stable tin II dlear evidence for the preparation and reactions of compounds (carbenes) has been extensively studied intermediates. We have now examined several such elusive and most of the early claims for their While the chemistry of carbon for tin have recently become available \supset ABSTRACT

COMPOUNDS SYNTHESIS, CHEMISTRY, QUANTUM CHEMISTRY COMPUTATIONS, ADDITION REACTIONS, CHEMICAL BONDS POLYMERIZATION METHYL RADICALS REPRINTS DESCRIPTORS - (U) - ORGANOMETALLIC COMPOUNDS - TIN

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COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

(U) Picosecond Dynamics of Barrier Crossing in Solution: A Study of the Conformational Change of Excited State 1. 1 Binaphthyl.

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PERSONAL WITHORS: Exsenthal Fenceth B. Millar David P

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SURPLEMENTARY NOTE - Publichical Gremichi Physics 183 1110 p50 16.4083 15 Nov 85 ABSTRACT C The rates on Toller arduced cristometteres Tell at use Connected the decision of the connected that the connected the connected that For the appropriate process. Changes I becited state in biologists) indiced this control of the The control of the co

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Non-Resonant Third Under Clectronic Responses in High Manifingur Optical Processor in Organic Media Lange Performance Liquid Chystal Polymer Structures

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CONTRACT NO F49620 84 C-0110 AFOSR-84-0135

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TR - 86 : 060 # AFOSE MONITOR

UNCLASSIFIED REPORT

Presented at SPIE 0 E LASE 85, Los Angeles, CA, Jan 86 SUPPLEMENTARY NOTE:

example, by high performancy liquid crystal polymers. For two such polymer systems, PBI and PBI thind harmonic nonnesonant thind order optical susceptibilities whose outstanding secondary properities as demonstrated for nonlinear optical properties in a large number of structures, phases, and states. Rapid advancer in the Organic and polymer structures exhibit generation measurements snow that they possess large field can be achieved through further development of sessions exertations of stable, high performance polymer structures having usususlly large ultrafast second and third order highly change connelated electron states onigin resides in ultrafact . D ABSTRACT

SCPIPTORS OUT POLYMERS OUTD CRYSTALS, ELECTRONIC STATES, OPTICS OPTICAL PROPERTIES NONLINEAR SYSTEMS, EXCITATION HARMONICS NEODYMIUM LASERS YAG LASERS POLYBENZIMIDAZOLE, OPTICAL EQUIPMENT DESCRIPTORS

Polypenzabisthiazole PE611026 WUAF0SR2302A3

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SEARCH CONTROL NO. EVN548 DITC REPORT BIBLIOGRAPHY

ANALYSIS, TURBULENT LIFFUSION, SHEAR STRESSES, REYMOLDS NUMBER, NUMERICAL ANALYSIS, PERTURBATIONS, REPRINTS

CONTINUED

AD A171 695

IDENTIFIERS (U) Reynolds Stress, Boussibesq Approximation PE61102F, WUADSR2310A1

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A Number 1991 Study of Gravity Wave Symestion Nonlinear and Multiple Wave Effect

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Reportions of Perfluoremetriles (1) Interactions with Dipheny lahosahine

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U. :Nakahara, U. H. :Fratzer Pactorel, * PERSONAL AUTHORS

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Pub in Jrd of Fluorine Chemistry, SUPPLEMENTARY NOTE: √30 p289-295 1985

diphenylphosphine gave two products, a primary adduct. C7F15Ci-NHiP-C6H5:2 and the reduced adduct, C7F15CH:NH2: P C6H5:2. Presence of water prevented the formation of Reaction of perfluoro-n-octanomitrile with the reduced compound, the latter was not produced by reduction of the primary adduct Operative mechanisms are postulated, infrared and mass spectra are discussed . -ABSTRACT

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PEPCONAL AUTHORS Bleker J. P. Halverson Don R.

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PERSONAL AUTHORS: Herge, Donna C., Proschan Frank Sethuraman Jayaram .

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replacement policy. The status of the device functioning functioning unit we show that we can obtain in optimum replacement age which minimize. U.T., the long run expected cust per unit of the $^{\circ}$ We find a lower bound for or tailed is known only by inspection at some fixed interval . With probability q an inspection enformable be made, and a functioning unit will be declared to lave inspection error will be made. Assuming that the past of replacing a failed unit cactually failed on pelveral when a failed unit is inspected, it is assumed that no failed and be replaced by a row unit. On the contrary the option' replacement and a state symptotic and monotomics by properties for \mathbb{R}^{-1} Author A device is appreained under an ago failed is greater than the cost of replacing > ABSIDACT U:

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Electromignetic Sensor Arrays for Nondestructive Evaluation and Robot Control

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understanding how best to analyze and control the spatial frequency content in the field configuration generated by most of this year's effort incused on obtaining Withing assing the fire STRACT - U The objective of this research prognam is to develop the theoretical models, design nethodology. is defined by the responses of inductive eddy ourners including probot to surface and surface and technology needed for optimum application of near field electromagnetic sensor armays in nondestructive probe Nortec SP0 841 10 St. 1000 - 01. indienrogite such breaking rectingular slots in itamicum prates. In experiments? mossurphents of the relative spatial Sil air core To aid in evaluation (NSE) and nobot control 2065 and an SPI constructed from a commyrcial reflecti coil probe compare favorably will sunface discontinuities. The dail reflection probe hase been used deneloped theory distribution Dar tigular Abduc de ABSTRACT

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RENSSELAER POLYTECHNIC INST TROY NY DEPT OF COMPUTER SCIENCE Adaptive Relinement Methods for Non-Linear Parabolic Partial Differential Equations

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Bieterman, Michael (Flaherty, Joseph E PERSONAL AUTHORS: Moore Peter K.

DAAG29-82-K-0197, AFDSR-80-0192 CONTRACT NO.

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UNCLASSIFIED REPORT

Adaptive Refinements in Finite Element Computations, p339-357-1986. Pub. 19 Accuracy Estimates and SUPPLEMENTARY NOTE

Sno tessinique Spatial elements are added error estimates to control most refinement. She technique is a method of lines (MSL) appreame that uses a Roberton and deleted in regions of high and low error and all that uses Galerkin approximations in both spice and time. Fine grids of spice time discovers MET DOUTEN arrely solved in realons advanced with the same sequence of varying time steps differential equations PDEs that are based on using method to discretize the PDEs in space and implicit This document considers two adaptive finite element techniques for parabolic partial The second technique is a local refinement multistap integration in time grids and the problem is reco

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